CCD-TRV10E/TRV12/TRV12E/TRV12PK
TRV22/TRV112/TRV212
RMT-713

SERVICE MANUAL

US Model
CCD-TRV12/TRV22/TRV112/TRV212
Canadian Model
CCD-TRV12/TRV22
AEP Model
UK Model
CCD-TRV10E
E Model
CCD-TRV12/TRV12PK
Hong Kong Model
CCD-TRV12
Russian Model
CCD-TRV10E/TRV12E
Tourist Model
CCD-TRV12

SONY
26x
SONY
Handycam Vision

Photo: CCD-TRV12

Video8
Handycam

B MECHANISM

Differences Manual

For MECHANISM ADJUSTMENT, refer to the "8 mm Video MECHANICAL ADJUSTMENT MANUAL VII" (9-973-801-11).

- The electrical and mechanical specifications for the models CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212 are the same as those for models CCD-TRV11E/TRV21/TRV21E except for the following points.

New Model	Original Model	Changed Points		
		Digital Zoom	Steady Shot	Cabinet Color
CCD-TRV10E	CCD-TRV11E	—	—	Gray
CCD-TRV12 /TRV12PK/TRV112	CCD-TRV21	US, Canadian: X26 E, Hong Kong, Tourist: X52	Deleted	Gray
CCD-TRV12E	CCD-TRV21E	X26	Deleted	Gray
CCD-TRV22/TRV212	CCD-TRV21	X26	Not Changed	Gray

- Therefore, this manual contains only the points which differ from the models CCD-TRV11E/TRV21/TRV21E.
- For the informations not contained in this manual, please refer to the CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK service manuals (9-973-913-☐☐).

8 VIDEO CAMERA RECORDER

MICROFILM

SONY®

• 2.5 inch LCD information

There are 2 kinds of TYPE A and TYPE B. Identify either TYPE A or B from the suffix of the board. However, PC board without parts (no mount) is not supplied.

BOARD	TYPE A	TYPE B
PD-67	1-660-424-13	1-660-424-22
SD-21	1-660-425-12	1-660-425-22

• Printed wiring boards, schematic diagrams and repair parts list information

The CAMERA1, VIDEO2, AUDIO, POWER, EVF blocks and repair parts list are partially listed in the schematic diagrams. Also, the printed wiring diagram shows the CF-42 board only.
For the schematic diagrams and repair parts list not listed and other printed wiring boards, see the CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK of the original Service Manual.

Schematic diagrams concerned

BLOCK	CAMERA1		VIDEO2		AUDIO		POWER		EVF	CAMERA2/3, VIDEO1, MODE/ SYSTEM CONTROL, STEADY SHOT, LCD, RGB DECODER
	CD-147	VC-167 (1/8)	JK-146	VC-167 (5/8)	MA-266	VC-167 (7/8)	DD-80	VC-167 (8/8)	VF-102	
THIS SERVICE MANUAL	○	—	○	—	Partial listing	Partial listing	Partial listing	—	Partial listting	—
ORIGINAL SERVICE MANUAL	—	○	—	○	○	○	○	○	○	○

- Notes for the page indication of destination in the block diagrams, schematic diagrams and marks.
  (SEE PAGE □□): Pages on the original service manual.
  <SEE PAGE □□>: Pages on this service manual.
  ☞: Points added parts.
  ☛: Points deleted parts.
  ▨: Points changed parts.

• Adjustment information

1. The adjustment here covers a part of LCD system adjustment and CAMERA section adjustment (see Note 1). For other adjsutments, see the CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK of the original Service Manual.
   However, the model names used in the description are different, and therefore refer to the model name correlative table below.

ORIGNAL SERVICE MANUAL	THIS SERVICE MANUAL	Remark (function)
CCD-TRV21/TRV21E	EXCEPT CCD-TRV10E	Digital zoom, Steady shot, Wide mode
CCD-TRV11E/TRV21E	CCD-TRV10E/TRV12E	PAL Mode
CCD-TRV11/TRV21	CCD-TRV12/TRV12PK/TRV22/TRV112/TRV212	NTSC Model

Note 1:
- Precautions
- Page F data modification
- Flange back adjustment
- Camera-shaking correction adjustment (CCD-TRV22/TRV212 model)
- FOR CAMERA COLOR REPRODUCTION ADJUSTMENT

2. NTSC model: CCD-TRV12/TRV12PK/TRV22/TRV112/TRV212
   PAL model: CCD-TRV10E/TRV12E

Table for difference of specification

Model	CCD-TRV12/TRV12PK/TRV112	CCD-TRV10E	CCD-TRV22/TRV212	CCD-TRV12E
Video signal	NTSC color, EIA standards	PAL color, CCIR standards	NTSC color, EIA standards	PAL color, CCIR standards
Recording/playback time	SP mode: 2 hours (P6-120) LP mode: 4 hours (P6-120)	SP mode: 1 hours and 30 minutes (P5-90) LP mode: 3 hours (P5-90)	SP mode: 2 hours (P6-120) LP mode: 4 hours (P6-120)	SP mode: 1 hours and 30 minutes (P5-90) LP mode: 3 hours (P5-90)
Fastforward/ rewind time	Approx. 5 min. (P6-120)	Approx. 5 min. (P5-90)	Approx. 5 min. (P6-120)	Approx. 5 min. (P5-90)
Focal distance	7/32 -2 5/8 inches(5.3-68.9 mm) When converted to a 35 mm still camera 1 9/16-18 1/2 inches (38-494 mm)		7/32-2 5/8 inches (5.3-68.9 mm) When converted to a 35 mm still camera 1 7/8-22 1/4 inches (46-598 mm)	
Minimum illumination	0.6 lux at F1.8	0.5 lux at F1.8	2 lux at F1.8	0.5 lux at F1.8
Illumination range	0.6 to 100,000 lux	0.5 to 100,000 lux	2 to 100,000 lux	0.5 to 100,000 lux
Average power consumption	4.8 W during camera recording using the LCD3.7 W during camera recording using the viewfinder	4.7 W during camera recording using the LCD 3.6 W during camera recording using the viewfinder	4.9 W during camera recording using the LCD 3.8 W during camera recording using the viewfinder	4.8 W during camera recording using the LCD 3.7 W during camera recording using the viewfinder
Mass (Approx.)	Excluding the battery pack, lithium battery, cassetted and Shoulder strap 860 g Including the bettery pack, NP-33, lithium battery CR2025, cassette P6-120 and shoulder strap 1.1 kg	Excluding the battery pack, lithium battery, cassetted and Shoulder strap 850 g Including the bettery pack, NP-33, lithium battery CR2025, cassette P5-90 and shoulder strap 1.1 kg	Excluding the battery pack, lithium battery, cassetted and Shoulder strap 870 g Including the bettery pack, NP-33, lithium battery CR2025, cassette P6-120 and shoulder strap 1.1 kg	Excluding the battery pack, lithium battery, cassetted and Shoulder strap 860 g Including the bettery pack, NP-33, lithium battery CR2025, cassette P5-90 and shoulder strap 1.1 kg

Table for difference of functions

Model	TRV10E (PAL)	TRV12 (US, CND)/ TRV112 (NTSC)	TRV12 (E, HK, JE)/ TRV12PK (NTSC)	TRV12E (PAL)	TRV22/TRV212 (NTSC)
Digital zoom	×	O (x26)	O (x52)	O (x26)	O (x26)
Steady shot	×	×	×	×	O
Wide mode	×	×	O	O	×

abbreviation
CND: Canadian model HK: Hong kong model JE: Tourist model

* CCD-TRV12PK is model that carring bag are added in CCD-TRV12 (E model). CCD-TRV12PK is different from CCD-TRV12 (E model) only in the accessory and packing materials.

* CCD-TRV112/TRV212 are the same as those for the model CCD-TRV12/TRV22 (US model) except for the color the cabinet.
CCD-TRV12 → CCD-TRV112, CCD-TRV22 → CCD-TRV212

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   Keep the temperature of the soldering iron around 270 °C during repairing.
   Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

1. BLOCK DIAGRAMS

1-1. OVERALL BLOCK DIAGRAM 1-1
1-2. CAMERA BLOCK DIAGRAM 1-4
1-3. VIDEO/AUDIO BLOCK DIAGRAM 1-7
1-4. SYSTEM CONTROL BLOCK DIAGRAM 1-9
1-5. SERVO BLOCK DIAGRAM 1-11
1-6. MODE CONTROL BLOCK DIAGRAM 1-15
1-7. LCD/EVF BLOCK DIAGRAM (TYPE A) 1-17
1-8. LCD/EVF BLOCK DIAGRAM (TYPE B) 1-19
1-9. POWER BLOCK DIAGRAM 1-21

2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

2-1. FRAME SCHEMATIC DIAGRAM 2-1
2-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS 2-4
- CD-147 (CCD IMAGER) SCHEMATIC DIAGRAM 2-4
- VC-167 (CAMERA 2) SCHEMATIC DIAGRAM 2-5
- VC-167 (CAMERA 3) SCHEMATIC DIAGRAM 2-8
- VC-167 (VIDEO 1) SCHEMATIC DIAGRAM 2-11
- JK-146 (JACK) SCHEMATIC DIAGRAM 2-14
- VC-167 (MODE CONTROL), FP-249 (MODE SENSOR) SCHEMATIC DIAGRAMS 2-15
- VC-167 (AUDIO AMP), MA-266 (AUDIO) SCHEMATIC DIAGRAMS 2-17
- DD-80 (POWER) SCHEMATIC DIAGRAM 2-18
- VF-102 (EVF) SCHEMATIC DIAGRAM 2-19
- PD-67 (LCD) (TYPE A) SCHEMATIC DIAGRAM 2-20
- PD-67 (LCD) (TYPE B) SCHEMATIC DIAGRAM 2-23
- SD-21 (R.G.B DECODER) (TYPE A) SCHEMATIC DIAGRAM 2-26
- SD-21 (R.G.B DECODER) (TYPE B) SCHEMATIC DIAGRAM 2-29
- CF-42 (SYSTEM CONTROL) PRINTED WIRING BOARD 2-33
- CF-42 (SYSTEM CONTROL) SCHEMATIC DIAGRAM 2-35
- TZ-5 (STEADY SHOT) SCHEMATIC DIAGRAM 2-37

3. DIFFERENT PARTS LIST

3-1. EXPLODED VIEWS 3-1
  3-1-1. CABINET (L), F PANEL SECTION 3-1
  3-1-2. CABINET (R) SECTION 3-2
  3-1-3. EVF SECTION 3-4
  3-1-4. MAIN SECTION 3-5
  3-1-5. CASSETTE COMPARTMENT BLOCK SECTION 3-6
  3-1-6. LS CHASSIS BLOCK SECTION 3-7
  3-1-7. MECHANISM CHASSIS BLOCK SECTION 3-8
3-2. ELECTRICAL PARTS LIST 3-9

4. ADJUSTMENTS

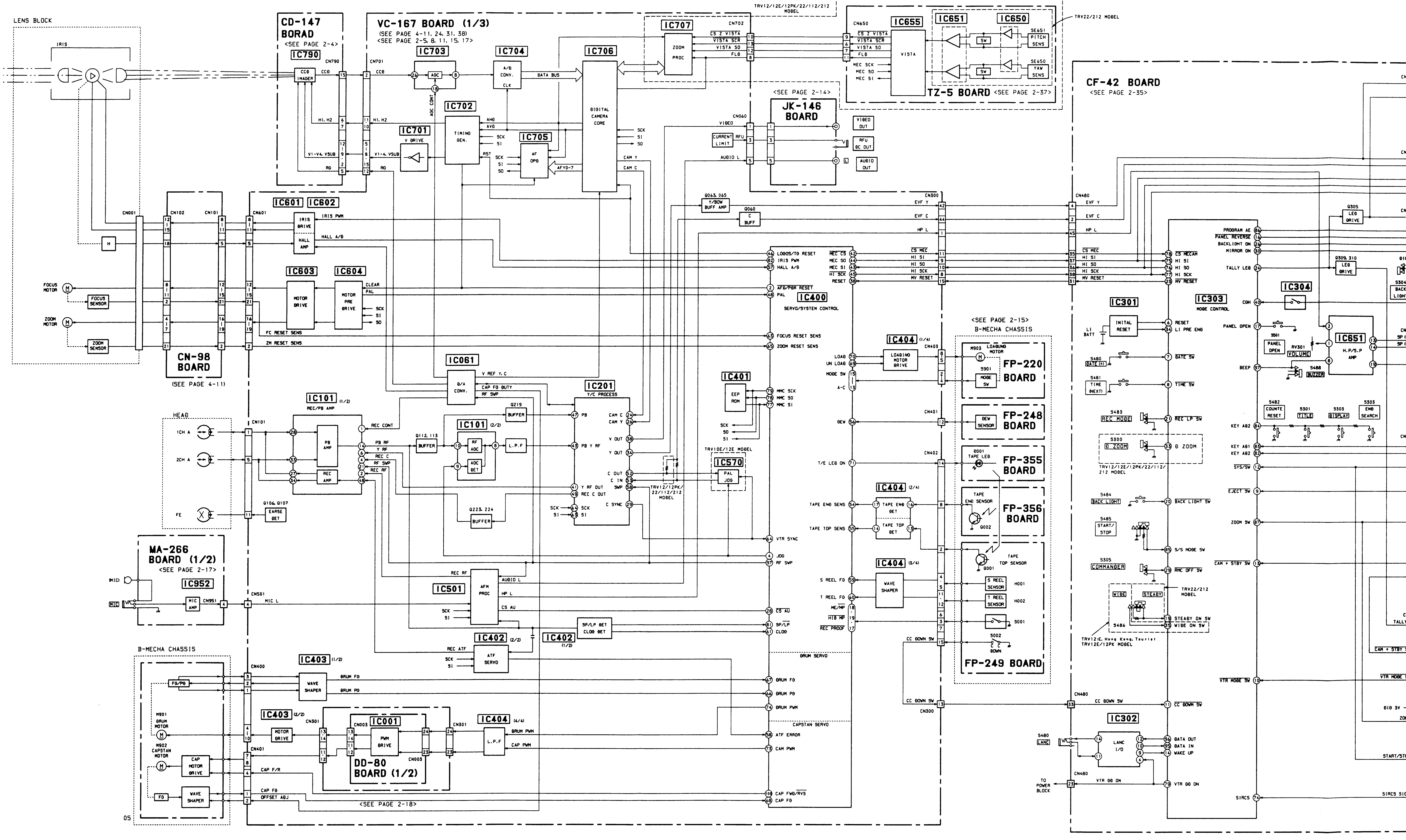
4-1. CAMERA SECTION ADJUSTMENT 4-1
4-1-1. CAMERA SYSTEM ADJUSTMENTS 4-1
  1-1. LCD system adjustments (PD-67 board) 4-1
    1-1. EVR intial data input 4-2
    1-2. –7.5 Vadjustment 4-3
    1-3. VCO adjustment 4-3
    1-4. Horizntal display position adjustment 4-4
    1-5. D RANGE adjustment 4-5
    1-6-1. BRIGHT adjustment (TYPE A) 4-6
    1-6-2. BRIGHT adjustment (TYPE B) 4-7
    1-7-1. CONTRAST adjustment (TYPE A) 4-8
    1-7-2. CONTRAST adjustment (TYPE B) 4-9
    1-8. V-COM level adjustment 4-10
    1-9. COLOR adjustment 4-11
    1-10. HUE adjustment (NTSC model only) 4-12
    1-11. BURST CLEANING adjustment 4-12
    1-12. V-COM adjustment 4-13
    1-13. White balance adjustment 4-14
  1-2. PREPARATIONS BEFORE ADJUSTEMNT 4-15
    2-1. Precautions 4-15
      1. Switch settings 4-15
      2. Adjustment sequence 4-15
      3. Subject 4-15
    2-2. Page F data modification 4-16
    2-3. Flange back adjustment 4-17
    2-4. Camera-shaking correction adjustment 4-18

* The color reproduction frame is shown after the page of 2-4. Camera-shaking correction adjustment.

SECTION 1
BLOCK DIAGRAMS

(SEE PAGE □□) : Pages on the original service manual.
<SEE PAGE □□> : Pages on this service manual.

1-1. OVERALL BLOCK DIAGRAM


LENS BLOCK
IRIS
FOCUS MOTOR
FOCUS SENSOR
ZOOM MOTOR
ZOOM SENSOR
CN001
CN-98 BOARD
(SEE PAGE 4-11)
CN102
CN101
CD-147 BORAD
<SEE PAGE 2-4>
IC790
CCD IMAGER
CN790
VC-167 BOARD (1/3)
(SEE PAGE 4-11, 24, 31, 38)
<SEE PAGE 2-5, 8, 11, 15, 17>
CN701
IC703
AGC
IC704
A/D CONV.
CLK
DATA BUS
IC706
DIGITAL CAMERA CORE
IC702
TIMING GEN.
IC701
V DRIVE
IC705
AF OPD
TRV12/12E/12PK/22/112/212 MODEL
IC707
ZOOM PROC
CN702
CS Z VISTA
VISTA SCK
VISTA SO
FLD
CN650
IC655
VISTA
MEC SCK
MEC SO
MEC SI
IC651
IC650
SW
SE651 PITCH SENS
SE650 YAW SENS
TZ-5 BOARD <SEE PAGE 2-37>
TRV22/212 MODEL
JK-146 BOARD
<SEE PAGE 2-14>
CN060
VIDEO
CURRENT LIMIT
RFU
AUDIO L
VIDEO OUT
RFU DC OUT
AUDIO OUT
IC601
IC602
IRIS DRIVE
HALL AMP
IRIS PWM
HALL A/B
CN601
IC603
MOTOR DRIVE
IC604
MOTOR PRE DRIVE
CLEAR
PAL
SCK
SI
SO
FC RESET SENS
ZM RESET SENS
Q063, 065
Y/BOW BUFF AMP
Q060
C BUFF
CN300
EVF Y
EVF C
HP L
CS MEC
HI SI
HI SO
HI SCK
MV RESET
IC400
SERVO/SYSTEM CONTROL
LOGOS/TG RESET
IRIS PWM
HALL A/B
AFG/PGR RESET
FOCUS RESET SENS
ZOOM RESET SENS
IC061
D/A CONV.
V REF Y, C
CAP FG DUTY
RF SWP
IC201
Y/C PROCESS
CAM C
CAM Y
PB
PB Y RF
V OUT
Y OUT
C OUT
C IN
SWP
Y RF OUT
REC C OUT
C SYNC
HEAD
1CH A
2CH A
FE
CN101
IC101 (1/2)
REC/PB AMP
PB AMP
REC AMP
REC CONT
PB RF
Y RF
REC C
RF SWP
REC RF
Q112, 113 BUFFER
IC101 (2/2)
RF AGC
AGC DET
L.P.F
Q219 BUFFER
Q223, 224 BUFFER
Q106, Q107 EARSE DET
IC401
EEP ROM
MMC SCK
MMC SO
MMC SI
TRV10E/12E MODEL
IC570
PAL JOG
TRV12/12PK/22/112/212 MODEL
VTR SYNC
JOG
RF SWP
MA-266 BOARD (1/2)
<SEE PAGE 2-17>
IC952
MIC AMP
CN951
CN501
MIC L
IC501
AFM PROC
AUDIO L
HP L
CS AU
SP/LP DET
CLOG DET
IC402 (2/2)
ATF SERVO
REC ATF
IC402 (1/2)
SP/LP
CLOG
B-MECHA CHASSIS
FG/PG
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
CAP MOTOR DRIVE
WAVE SHAPER
FG
CN400
IC403 (1/2)
WAVE SHAPER
DRUM FG
DRUM PG
IC403 (2/2)
MOTOR DRIVE
CN301
CN003
IC001
PWM DRIVE
DD-80 BOARD (1/2)
IC404 (4/4)
L.P.F
DRUM PWM
CAP PWM
CN401
CAP F/R
CAP FG
OFFSET ADJ
<SEE PAGE 2-18>
DRUM SERVO
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
ATF ERROR
CAM PWM
CAP FWD/RVS
CAP FG
IC404 (1/4)
LOADING MOTOR DRIVE
LOAD
UN LOAD
MODE SW
A-C
DEW
T/E LED ON
IC404 (2/4)
TAPE END DET
TAPE TOP DET
TAPE END SENS
TAPE TOP SENS
IC404 (3/4)
WAVE SHAPER
S REEL FG
T REEL FG
HE/HP
HI8 HP
REC PROOF
CC DOWN SW
CN403
CN402
<SEE PAGE 2-15>
B-MECHA CHASSIS
M903 LOADING MOTOR
S901 MODE SW
FP-220 BOARD
DEW SENSOR
FP-248 BOARD
D001 TAPE LED
FP-355 BOARD
TAPE END SENSOR
Q002
FP-356 BOARD
TAPE TOP SENSOR
Q001
S REEL SENSOR
T REEL SENSOR
H001
H002
S001
S002 DOWN
FP-249 BOARD
CF-42 BOARD
<SEE PAGE 2-35>
CN480
IC301
INITIAL RESET
LI BATT
RESET
LI PRE END
S480 DATE (+)
DATE SW
S481 TIME (NEXT)
TIME SW
S483 REC MODE
REC LP SW
S300 D ZOOM
D ZOOM
TRV12/12E/12PK/22/112/212 MODEL
S484 BACK LIGHT
BACK LIGHT SW
S485 START/STOP
S/S MODE SW
S305 COMMANDER
RMC OFF SW
WIDE
STEADY
S486
TRV22/212 MODEL
STEADY ON SW
WIDE ON SW
TRV12/E, Hong Kong, Tourist TRV12E/12PK MODEL
CC DOWN SW
IC302
LANC I/O
S480 LANC
DATA OUT
DATA IN
WAKE UP
TO POWER BLOCK
VTR DD ON
IC303
MODE CONTROL
CS MECAM
HI SI
HI SO
HI SCK
MV RESET
PROGRAM AE
PANEL REVERSE
BACKLIGHT ON
MIRROR ON
TALLY LED
COM
PANEL OPEN
S501 PANEL OPEN
RV301 VOLUME
BEEP
S488 BUZZER
IC304
IC651
H.P/S.P AMP
Q305 LED DRIVE
Q309, 310 LED DRIVE
S482 COUNTE RESET
S301 TITLE
S303 DISPLAY
S303 END SEARCH
KEY AD2
KEY AD1
KEY AD2
SYS/SW
EJECT SW
ZOOM SW
CAM + STBY SW
VTR MODE SW
SIRCS
05

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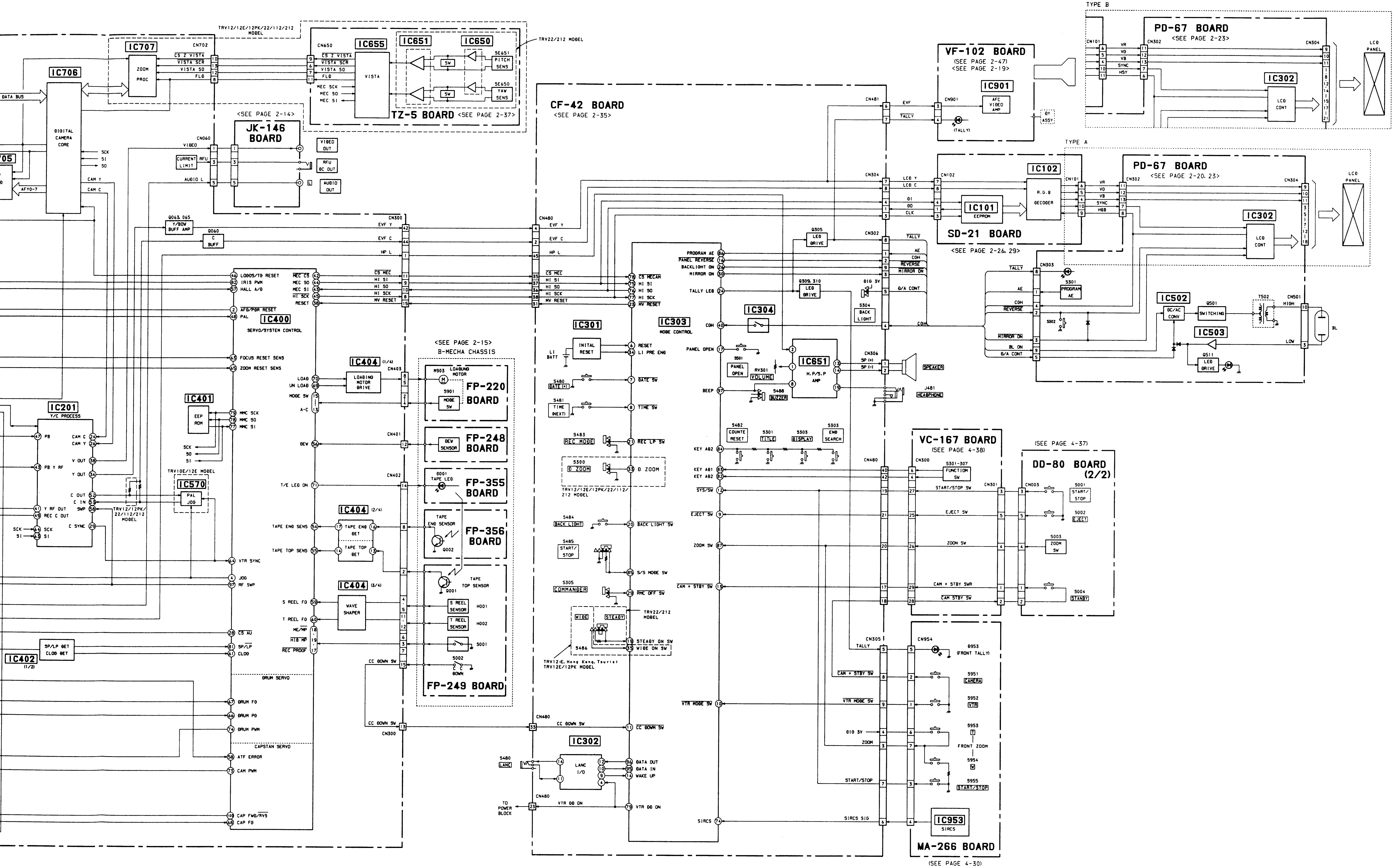
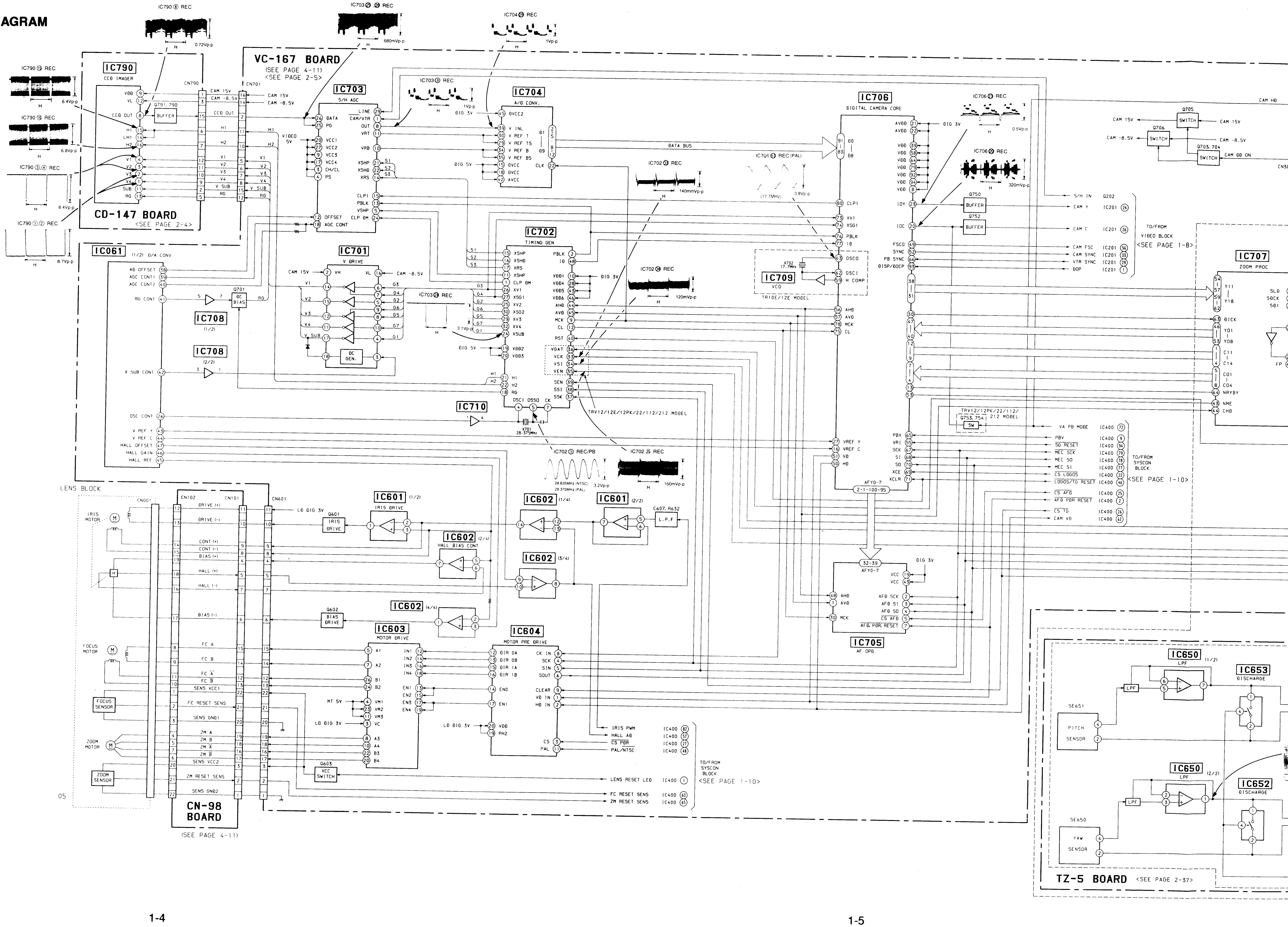
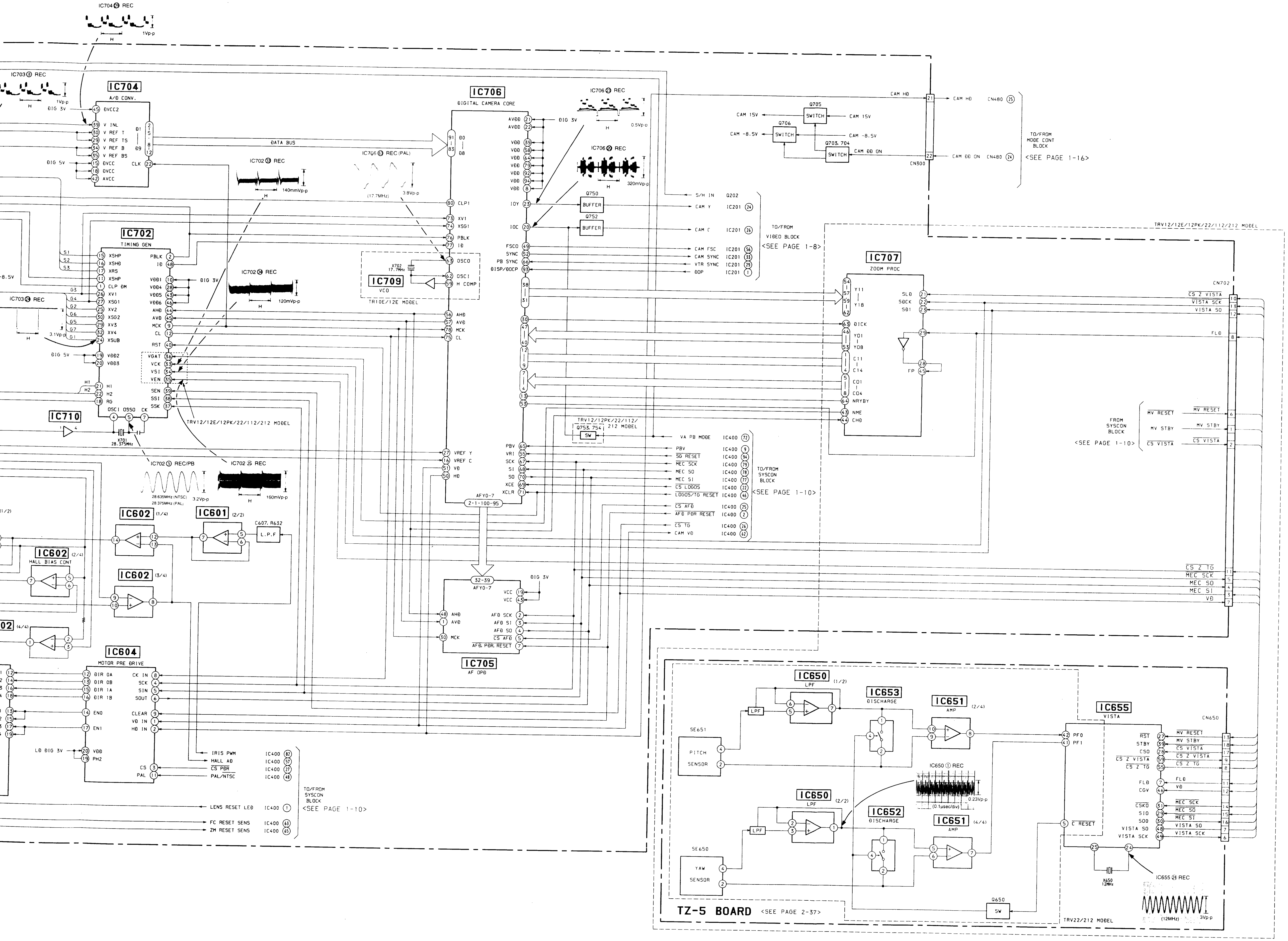
rvice manual.

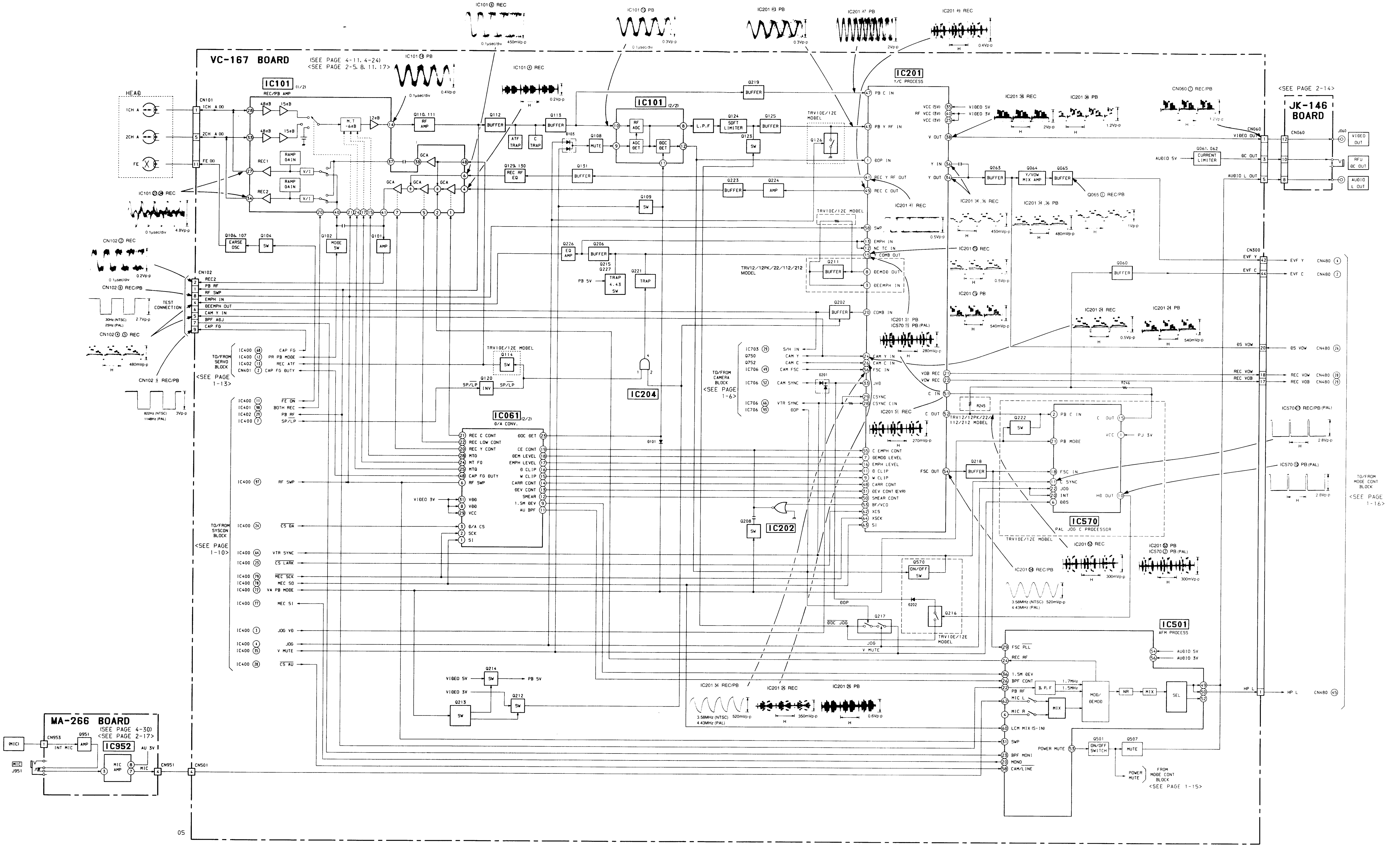

IC707
ZOOM PROC
CN702
IC706
DIGITAL CAMERA CORE
DATA BUS
TRV12/12E/12PK/22/112/212 MODEL
IC655
VISTA
IC651
IC650
PITCH SENS
YAW SENS
TRV22/212 MODEL
TZ-5 BOARD <SEE PAGE 2-37>
JK-146 BOARD
<SEE PAGE 2-14>
VIDEO OUT
RFU DC OUT
AUDIO OUT
CF-42 BOARD
<SEE PAGE 2-35>
VF-102 BOARD
(SEE PAGE 2-47)
<SEE PAGE 2-19>
IC901
AFC VIDEO AMP
TYPE B
PD-67 BOARD
<SEE PAGE 2-23>
IC302
LCD CONT
LCD PANEL
TYPE A
PD-67 BOARD
<SEE PAGE 2-20, 23>
IC102
R.G.B DECODER
IC101
EEPROM
SD-21 BOARD
<SEE PAGE 2-26, 29>
IC302
LCD CONT
LCD PANEL
IC502
DC/AC CONV
IC503
BL
Q063, 065 Y/BOW BUFF AMP
Q060 C BUFF
IC400
SERVO/SYSTEM CONTROL
IC404 (1/4)
LOADING MOTOR DRIVE
<SEE PAGE 2-15>
B-MECHA CHASSIS
M903 LOADING MOTOR
FP-220 BOARD
FP-248 BOARD
DEW SENSOR
FP-355 BOARD
D001 TAPE LED
FP-356 BOARD
TAPE END SENSOR
IC404 (2/4)
TAPE END DET
TAPE TOP DET
IC404 (3/4)
WAVE SHAPER
TAPE TOP SENSOR
S REEL SENSOR
T REEL SENSOR
FP-249 BOARD
IC201
Y/C PROCESS
IC401
EEP ROM
IC570
PAL JOG
TRV10E/12E MODEL
IC402
DRUM SERVO
CAPSTAN SERVO
IC301
INITIAL RESET
IC303
MODE CONTROL
IC304
IC651
H.P/S.P AMP
SPEAKER
HEADPHONE
IC302
LANC I/O
TO POWER BLOCK
VC-167 BOARD
(SEE PAGE 4-38)
FUNCTION SW
DD-80 BOARD (2/2)
(SEE PAGE 4-37)
MA-266 BOARD
(SEE PAGE 4-30)
IC953
SIRCS

1-2. CAMERA BLOCK DIAGRAM

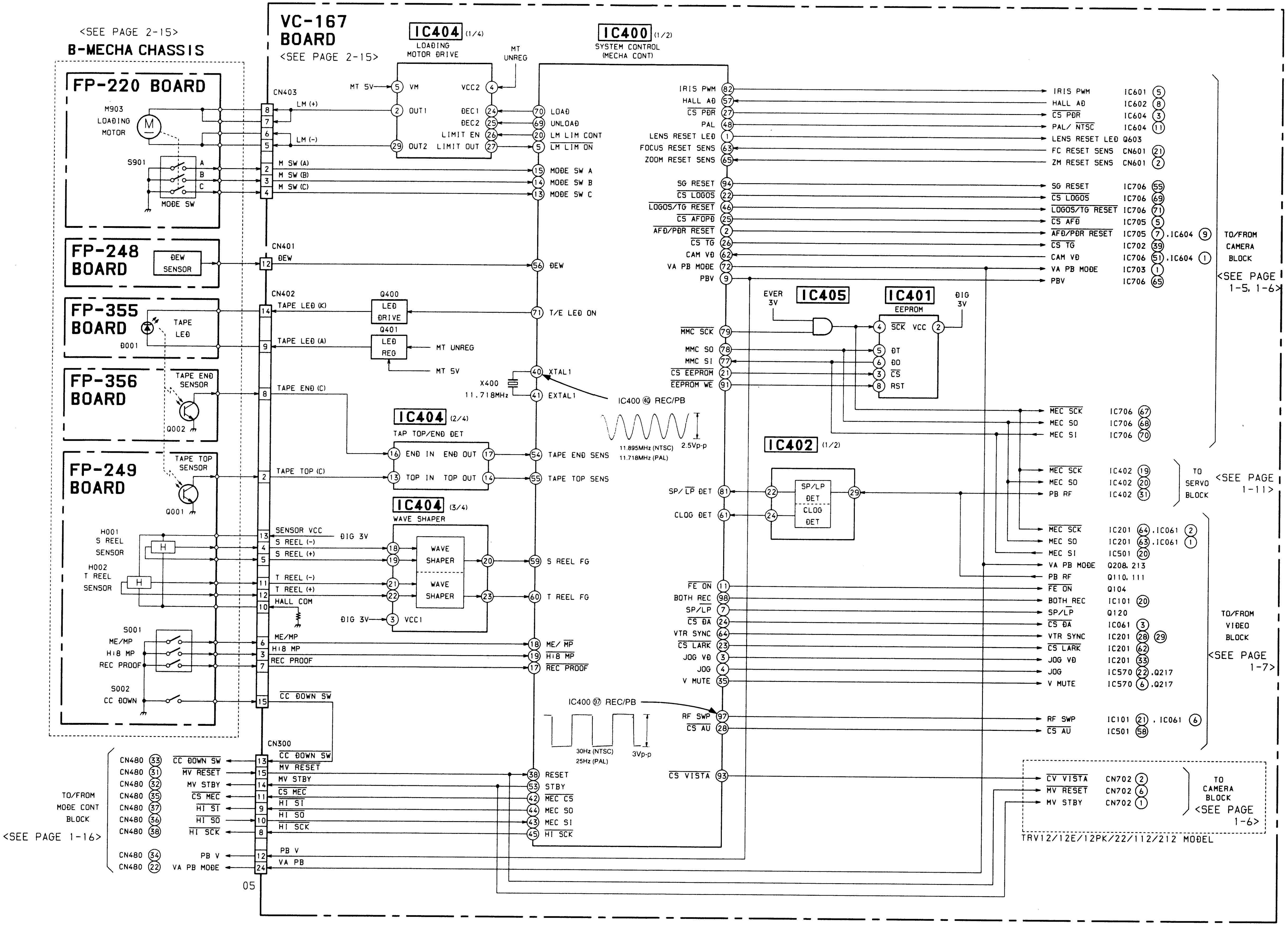

IC790 REC
IC703 REC
IC704 REC
IC790
CCD IMAGER
CD-147 BOARD
<SEE PAGE 2-4>
VC-167 BOARD
(SEE PAGE 4-11)
<SEE PAGE 2-5>
IC703
S/H AGC
IC704
A/D CONV.
IC706
DIGITAL CAMERA CORE
IC702
TIMING GEN
IC701
V DRIVE
IC061
(1/2) D/A CONV
IC708
(1/2)
IC708
(2/2)
IC709
VCO
TR10E/12E MODEL
IC710
X701
28.375MHz
TRV12/12E/12PK/22/112/212 MODEL
DATA BUS
BUFFER
Q750
Q752
SWITCH
Q705
Q706
Q703, 704
CAM 15V
CAM -8.5V
CAM HD
TO/FROM
VIDEO BLOCK
<SEE PAGE 1-8>
IC707
ZOOM PROC
TO/FROM
SYSCON
BLOCK
<SEE PAGE 1-10>
LENS BLOCK
IRIS MOTOR
FOCUS MOTOR
ZOOM MOTOR
FOCUS SENSOR
ZOOM SENSOR
CN-98
BOARD
(SEE PAGE 4-11)
IC601
IRIS DRIVE
Q601
IRIS DRIVE
IC602
HALL BIAS CONT
Q602
BIAS DRIVE
IC603
MOTOR DRIVE
IC604
MOTOR PRE DRIVE
Q603
VCC SWITCH
C607, R632
L.P.F
IC705
AF OPD
AFYO-7
2-1-100-95
IC650
LPF
IC653
DISCHARGE
IC652
DISCHARGE
SE651
PITCH SENSOR
SE650
YAW SENSOR
TZ-5 BOARD
<SEE PAGE 2-37>


IC704 A/D CONV.
IC706 DIGITAL CAMERA CORE
IC702 TIMING GEN
IC709 VCO
TRV10E/12E MODEL
IC710
IC707 ZOOM PROC
IC705 AF OPD
IC602 (1/4)
IC601 (2/2)
IC602 (2/4) HALL BIAS CONT
IC602 (3/4)
IC602 (4/4)
IC604 MOTOR PRE DRIVE
C607, R632 L.P.F
IC704 ⑧ REC
IC703 ⑧ REC
IC703 ⑨ REC
IC702 ⑨ REC
IC702 ⑭ REC
IC702 ⑤ REC/PB
IC702 35 REC
IC706 ⑬ REC (PAL)
IC706 ㉓ REC
IC706 ⑳ REC
1Vp-p
140mVp-p
120mVp-p
3.1Vp-p
3.8Vp-p
0.5Vp-p
320mVp-p
3.2Vp-p
160mVp-p
28.635MHz (NTSC)
28.375MHz (PAL)
X701 28.375MHz
X702 17.7MHz
DATA BUS
DIG 3V
DIG 5V
TRV12/12E/12PK/22/112/212 MODEL
Q750 BUFFER
Q752 BUFFER
Q753, 754 SW
Q705 SWITCH
Q706 SWITCH
Q703, 704 SWITCH
CAM HD
CAM 15V
CAM -8.5V
CAM DD ON
CN480 ㉕
CN480 ㉔
CN300
TO/FROM MODE CONT BLOCK
<SEE PAGE 1-16>
S/H IN Q202
CAM Y IC201 ㉔
CAM C IC201 ㉖
CAM FSC IC201 (56)
CAM SYNC IC201 ㉝
VTR SYNC IC201 ㉙
DDP IC201 ①
TO/FROM VIDEO BLOCK
<SEE PAGE 1-8>
VA PB MODE IC400 (72)
PBV IC400 ⑨
SO RESET IC400 (94)
MEC SCK IC400 (78)
MEC SO IC400 (76)
MEC SI IC400 (77)
CS LOGOS IC400 ㉒
LOGOS/TG RESET IC400 ㊻
CS AFD IC400 ㉕
AFD PDR RESET IC400 ②
CS TG IC400 ㉔
CAM VD IC400 (62)
TO/FROM SYSCON BLOCK
<SEE PAGE 1-10>
AFYO-7
2·1·100-95
32-39
CN702
CS Z VISTA
VISTA SCK
VISTA SO
FLO
FROM SYSCON BLOCK
<SEE PAGE 1-10>
MV RESET
MV STBY
CS VISTA
CS Z TG
MEC SCK
MEC SO
MEC SI
VD
IRIS PWM IC400 (82)
HALL AD IC400 (57)
CS PDR IC400 ㉗
PAL/NTSC IC400 ㊽
LENS RESET LED IC400 ①
FC RESET SENS IC400 (63)
ZM RESET SENS IC400 (65)
TO/FROM SYSCON BLOCK
<SEE PAGE 1-10>
LD DIG 3V
IC650 (1/2) LPF
IC653 DISCHARGE
IC651 (2/4) AMP
IC655 VISTA
IC650 (2/2) LPF
IC652 DISCHARGE
IC651 (4/4) AMP
IC650 ① REC
0.23Vp-p
(0.1usec/div)
SE651 PITCH SENSOR
SE650 YAW SENSOR
Q650 SW
CN650
X650 12MHz
IC655 ㉔ REC
(12MHz)
3Vp-p
TRV22/212 MODEL
TZ-5 BOARD <SEE PAGE 2-37>

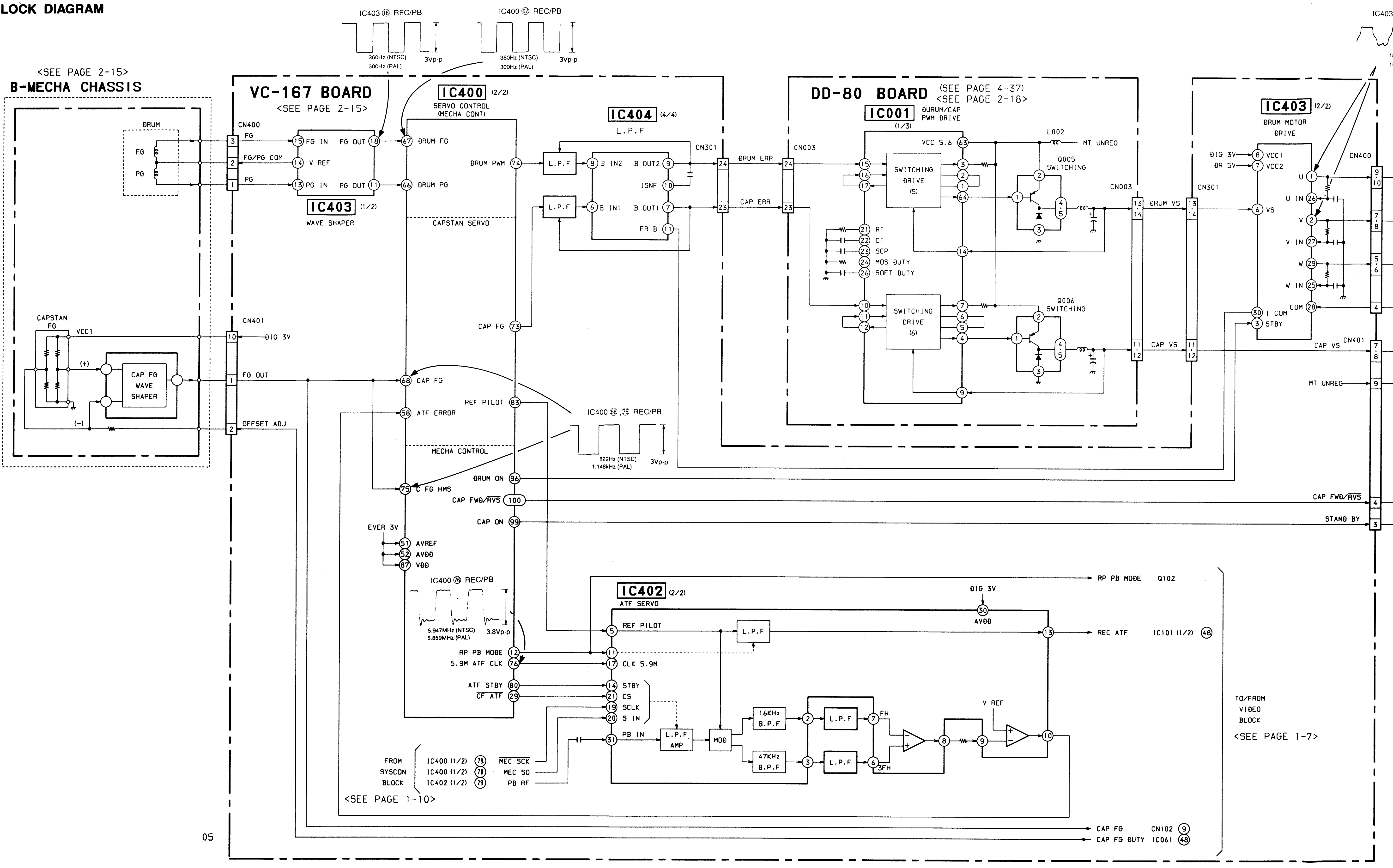
1-3. VIDEO/AUDIO BLOCK DIAGRAM

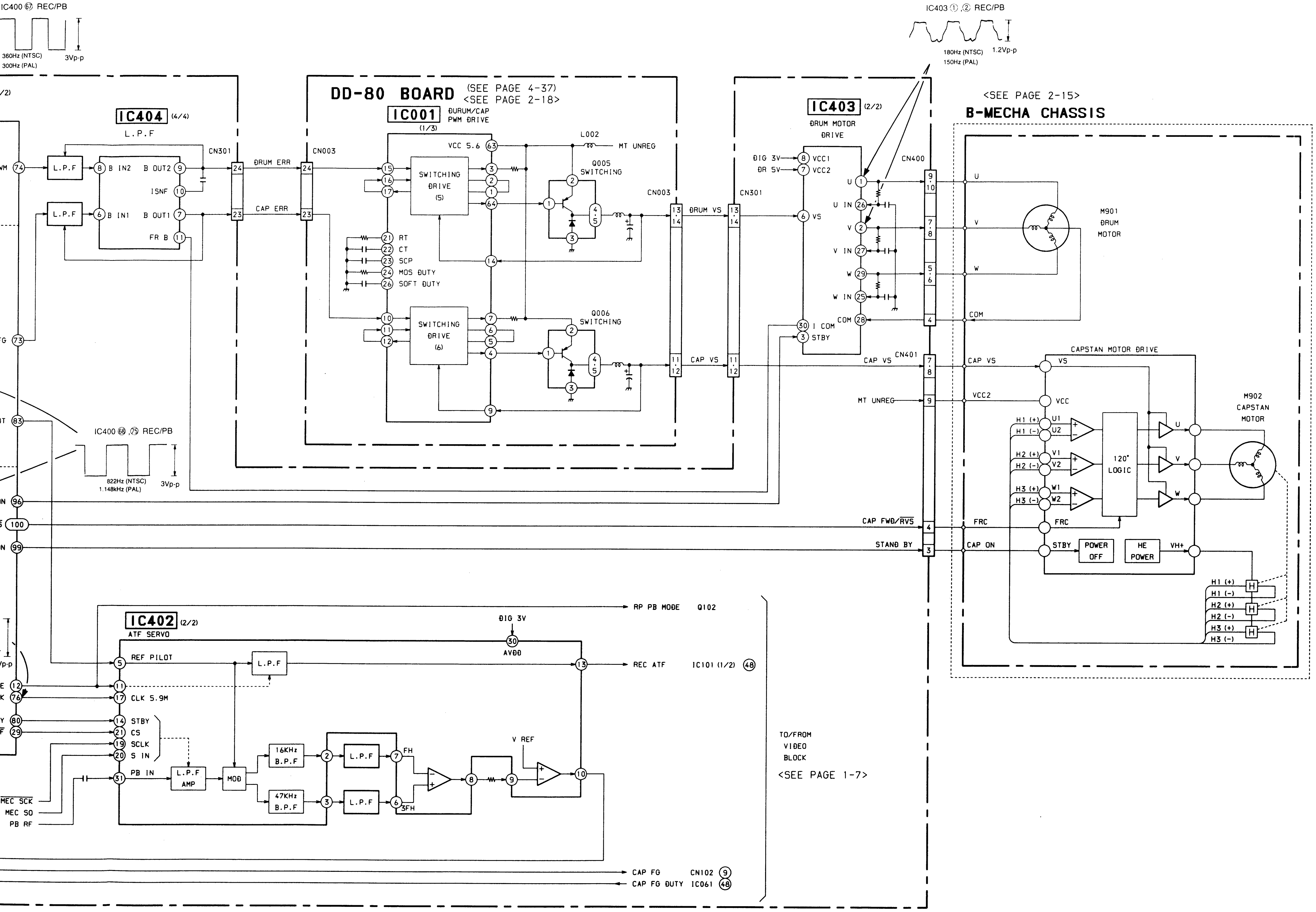

VC-167 BOARD
(SEE PAGE 4-11, 4-24)
<SEE PAGE 2-5, 8, 11, 17>
IC101 (1/2)
REC/PB AMP
IC101 (2/2)
IC201
Y/C PROCESS
IC061 (2/2)
D/A CONV.
IC204
IC202
IC570
PAL JOG C PROCESSOR
IC501
AFM PROCESS
JK-146 BOARD
<SEE PAGE 2-14>
MA-266 BOARD
(SEE PAGE 4-30)
<SEE PAGE 2-17>
IC952
HEAD
1CH A
2CH A
FE
CN101
CN102
TEST CONNECTION
RF AMP
BUFFER
ATF TRAP
C TRAP
MUTE
RF AGC
AGC DET
DOC DET
L.P.F
SOFT LIMITER
SW
EQ AMP
TRAP 4.43
EARSE OSC
MODE SW
AMP
GCA
RAMP GAIN
V/I
M.T -6dB
REC RF EQ
INV
SP/LP
Y/VOW MIX AMP
CURRENT LIMITER
VIDEO OUT
RFU DC OUT
AUDIO L OUT
TO/FROM SERVO BLOCK <SEE PAGE 1-13>
TO/FROM SYSCON BLOCK <SEE PAGE 1-10>
TO/FROM CAMERA BLOCK <SEE PAGE 1-6>
TO/FROM MODE CONT BLOCK <SEE PAGE 1-16>
POWER MUTE
FROM MODE CONT BLOCK <SEE PAGE 1-15>
B.P.F
MOD/DEMOD
NR
MIX
SEL
ON/OFF SWITCH
MIC
MIC AMP
INT MIC
J951
CN953
CN951
CN501
CN060
CN300
EVF Y
EVF C
OS VDW
REC VDW
REC VDB
HP L
CN480
TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL

1-4. SYSTEM CONTROL BLOCK DIAGRAM

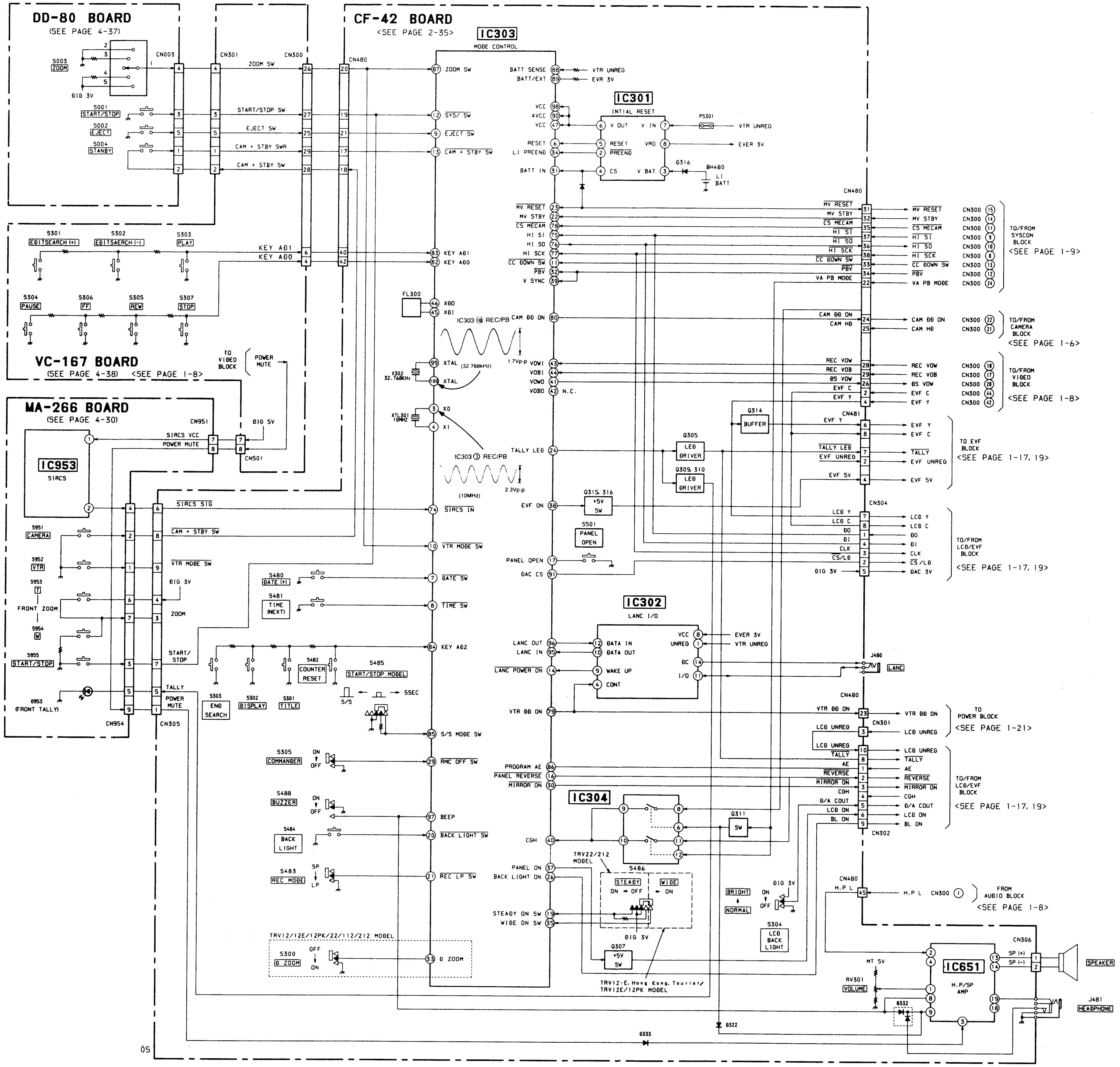

<SEE PAGE 2-15>
B-MECHA CHASSIS
FP-220 BOARD
M903 LOADING MOTOR
S901
A
B
C
MODE SW
FP-248 BOARD
DEW SENSOR
FP-355 BOARD
TAPE LED
D001
FP-356 BOARD
TAPE END SENSOR
Q002
FP-249 BOARD
TAPE TOP SENSOR
Q001
H001 S REEL SENSOR
H002 T REEL SENSOR
H
S001
ME/MP
Hi8 MP
REC PROOF
S002
CC DOWN
VC-167 BOARD
<SEE PAGE 2-15>
CN403
LM (+)
LM (-)
M SW (A)
M SW (B)
M SW (C)
CN401
DEW
CN402
TAPE LED (K)
TAPE LED (A)
TAPE END (C)
TAPE TOP (C)
SENSOR VCC
DIG 3V
S REEL (-)
S REEL (+)
T REEL (-)
T REEL (+)
HALL COM
ME/MP
Hi8 MP
REC PROOF
CC DOWN SW
CN300
CC DOWN SW
MV RESET
MV STBY
CS MEC
HI SI
HI SO
HI SCK
PB V
VA PB
05
IC404 (1/4)
LOADING MOTOR DRIVE
MT UNREG
MT 5V
VM
VCC2
OUT1
OUT2
DEC1
DEC2
LIMIT EN
LIMIT OUT
Q400 LED DRIVE
Q401 LED REG
MT UNREG
MT 5V
X400 11.718MHz
IC404 (2/4)
TAP TOP/END DET
END IN
END OUT
TOP IN
TOP OUT
IC404 (3/4)
WAVE SHAPER
WAVE SHAPER
DIG 3V
VCC1
IC400 (1/2)
SYSTEM CONTROL (MECHA CONT)
LOAD
UNLOAD
LM LIM CONT
LM LIM ON
MODE SW A
MODE SW B
MODE SW C
DEW
T/E LED ON
XTAL1
EXTAL1
IC400 ㊵ REC/PB
11.895MHz (NTSC) 2.5Vp-p
11.718MHz (PAL)
TAPE END SENS
TAPE TOP SENS
S REEL FG
T REEL FG
ME/MP
Hi8 MP
REC PROOF
IC400 ㊼ REC/PB
30Hz (NTSC) 25Hz (PAL) 3Vp-p
RESET
STBY
MEC CS
MEC SO
MEC SI
HI SCK
IRIS PWM
HALL AD
CS PDR
PAL
LENS RESET LED
FOCUS RESET SENS
ZOOM RESET SENS
SG RESET
CS LOGOS
LOGOS/TG RESET
CS AFOPD
AFD/PDR RESET
CS TG
CAM VD
VA PB MODE
PBV
MMC SCK
MMC SO
MMC SI
CS EEPROM
EEPROM WE
SP/LP DET
CLOG DET
FE ON
BOTH REC
SP/LP
CS DA
VTR SYNC
CS LARK
JOG VD
JOG
V MUTE
RF SWP
CS AU
CS VISTA
EVER 3V
IC405
IC401 EEPROM
DIG 3V
SCK
VCC
DT
DO
CS
RST
IC402 (1/2)
SP/LP DET
CLOG DET
IRIS PWM IC601 ⑤
HALL AD IC602 ⑧
CS PDR IC604 ③
PAL/NTSC IC604 ⑪
LENS RESET LED Q603
FC RESET SENS CN601 ㉑
ZM RESET SENS CN601 ②
SG RESET IC706 55
CS LOGOS IC706 69
LOGOS/TG RESET IC706 71
CS AFD IC705 ⑤
AFD/PDR RESET IC705 ⑦, IC604 ⑨
CS TG IC702 ㊴
CAM VD IC706 51, IC604 ①
VA PB MODE IC703 ①
PBV IC706 65
TO/FROM CAMERA BLOCK
<SEE PAGE 1-5, 1-6>
MEC SCK IC706 67
MEC SO IC706 68
MEC SI IC706 70
MEC SCK IC402 ⑲
MEC SO IC402 ⑳
PB RF IC402 ㉛
TO SERVO BLOCK
<SEE PAGE 1-11>
MEC SCK IC201 64, IC061 ②
MEC SO IC201 63, IC061 ①
MEC SI IC501 ⑳
VA PB MODE Q208, 213
PB RF Q110, 111
FE ON Q104
BOTH REC IC101 ⑳
SP/LP Q120
CS DA IC061 ③
VTR SYNC IC201 ㉘ ㉙
CS LARK IC201 62
JOG VD IC201 ㉝
JOG IC570 ㉒, Q217
V MUTE IC570 ⑥, Q217
RF SWP IC101 ㉑, IC061 ⑥
CS AU IC501 58
TO/FROM VIDEO BLOCK
<SEE PAGE 1-7>
CV VISTA CN702 ②
MV RESET CN702 ⑥
MV STBY CN702 ①
TO CAMERA BLOCK
<SEE PAGE 1-6>
TRV12/12E/12PK/22/112/212 MODEL
CN480 ㉝ CC DOWN SW
CN480 ㉛ MV RESET
CN480 ㉜ MV STBY
CN480 ㉟ CS MEC
CN480 ㊲ HI SI
CN480 ㊱ HI SO
CN480 ㊳ HI SCK
CN480 ㉞ PB V
CN480 ㉒ VA PB MODE
TO/FROM MODE CONT BLOCK
<SEE PAGE 1-16>

1-5. SERVO BLOCK DIAGRAM

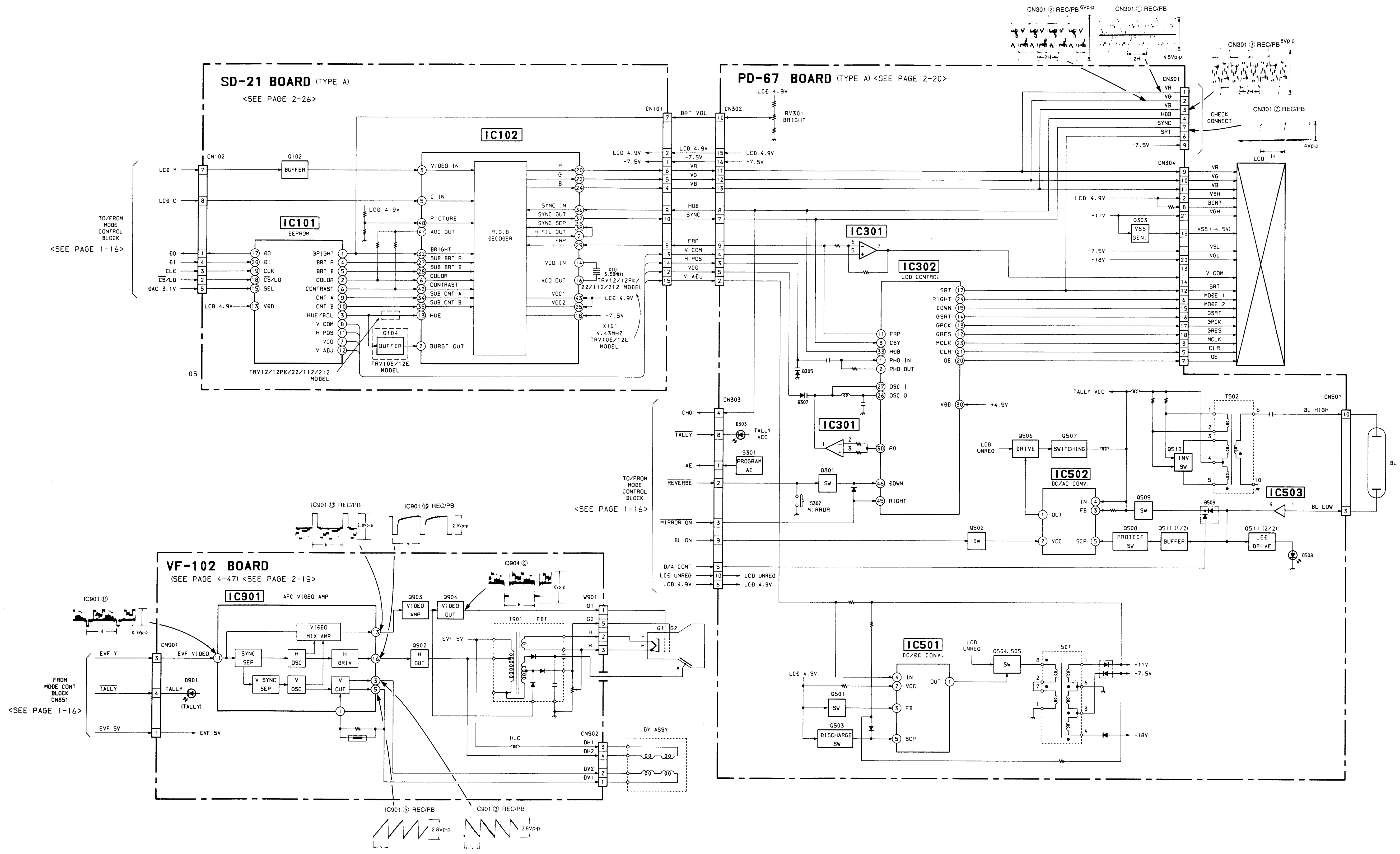

IC403 ⑱ REC/PB
360Hz (NTSC)
300Hz (PAL)
3Vp-p
IC400 ⑰ REC/PB
360Hz (NTSC)
300Hz (PAL)
3Vp-p
<SEE PAGE 2-15>
B-MECHA CHASSIS
DRUM
FG
PG
CAPSTAN FG
VCC1
(+)
(-)
CAP FG WAVE SHAPER
VC-167 BOARD
<SEE PAGE 2-15>
CN400
FG
FG/PG COM
PG
IC403 (1/2)
WAVE SHAPER
FG IN
FG OUT
V REF
PG IN
PG OUT
CN401
DIG 3V
FG OUT
OFFSET ADJ
IC400 (2/2)
SERVO CONTROL (MECHA CONT)
DRUM FG
DRUM PG
DRUM PWM
CAPSTAN SERVO
CAP FG
CAP FG
ATF ERROR
REF PILOT
MECHA CONTROL
C FG HMS
DRUM ON
CAP FWD/RVS
CAP ON
EVER 3V
AVREF
AVDD
VDD
IC400 ⑱,⑲ REC/PB
822Hz (NTSC)
1.148kHz (PAL)
3Vp-p
IC400 ⑯ REC/PB
5.947MHz (NTSC)
5.859MHz (PAL)
3.8Vp-p
RP PB MODE
5.9M ATF CLK
ATF STBY
CF ATF
IC404 (4/4)
L.P.F
B IN2
B OUT2
ISNF
B IN1
B OUT1
FR B
CN301
DRUM ERR
CAP ERR
DD-80 BOARD
(SEE PAGE 4-37)
<SEE PAGE 2-18>
IC001
DURUM/CAP PWM DRIVE
(1/3)
CN003
VCC 5.6
L002
MT UNREG
Q005 SWITCHING
SWITCHING DRIVE (5)
RT
CT
SCP
MOS DUTY
SOFT DUTY
SWITCHING DRIVE (6)
Q006 SWITCHING
CN003
DRUM VS
CAP VS
CN301
IC403 (2/2)
DRUM MOTOR DRIVE
DIG 3V
DR 5V
VCC1
VCC2
VS
U
U IN
V
V IN
W
W IN
COM
I COM
STBY
CN400
CN401
CAP VS
MT UNREG
CAP FWD/RVS
STAND BY
IC403
IC402 (2/2)
ATF SERVO
DIG 3V
AVDD
REF PILOT
L.P.F
REC ATF
IC101 (1/2) (48)
RP PB MODE
Q102
CLK 5.9M
STBY
CS
SCLK
S IN
PB IN
L.P.F AMP
MOD
16KHz B.P.F
47KHz B.P.F
L.P.F
FH
3FH
V REF
FROM SYSCON BLOCK
IC400 (1/2) ⑲ MEC SCK
IC400 (1/2) ⑱ MEC SO
IC402 (1/2) ㉙ PB RF
<SEE PAGE 1-10>
TO/FROM VIDEO BLOCK
<SEE PAGE 1-7>
CAP FG
CN102 ⑨
CAP FG DUTY
IC061 (48)
05


IC400 ㊼ REC/PB
360Hz (NTSC)
300Hz (PAL)
3Vp-p
IC403 ①,② REC/PB
180Hz (NTSC)
150Hz (PAL)
1.2Vp-p
IC404 (4/4)
L.P.F
B IN2
B OUT2
ISNF
B IN1
B OUT1
FR B
CN301
DRUM ERR
CAP ERR
DD-80 BOARD
(SEE PAGE 4-37)
<SEE PAGE 2-18>
IC001 DRUM/CAP PWM DRIVE (1/3)
CN003
VCC 5.6
L002
MT UNREG
Q005 SWITCHING
SWITCHING DRIVE (5)
SWITCHING DRIVE (6)
Q006 SWITCHING
RT
CT
SCP
MOS DUTY
SOFT DUTY
DRUM VS
CAP VS
IC403 (2/2)
DRUM MOTOR DRIVE
DIG 3V
DR 5V
VCC1
VCC2
VS
U
U IN
V
V IN
W
W IN
COM
I COM
STBY
CN400
CN401
MT UNREG
CAP FWD/RVS
STAND BY
<SEE PAGE 2-15>
B-MECHA CHASSIS
M901 DRUM MOTOR
CAPSTAN MOTOR DRIVE
VCC2
VCC
H1 (+)
H1 (-)
H2 (+)
H2 (-)
H3 (+)
H3 (-)
U1
U2
V1
V2
W1
W2
120° LOGIC
M902 CAPSTAN MOTOR
FRC
CAP ON
STBY
POWER OFF
HE POWER
VH+
IC400 ㉘,㊳ REC/PB
822Hz (NTSC)
1.148kHz (PAL)
3Vp-p
IC402 (2/2)
ATF SERVO
DIG 3V
AVDD
REF PILOT
L.P.F
CLK 5.9M
STBY
CS
SCLK
S IN
PB IN
L.P.F AMP
MOD
16KHz B.P.F
47KHz B.P.F
FH
3FH
V REF
RP PB MODE Q102
REC ATF IC101 (1/2) ㊽
TO/FROM VIDEO BLOCK
<SEE PAGE 1-7>
MEC SCK
MEC SO
PB RF
CAP FG CN102 ⑨
CAP FG DUTY IC061 ㊽

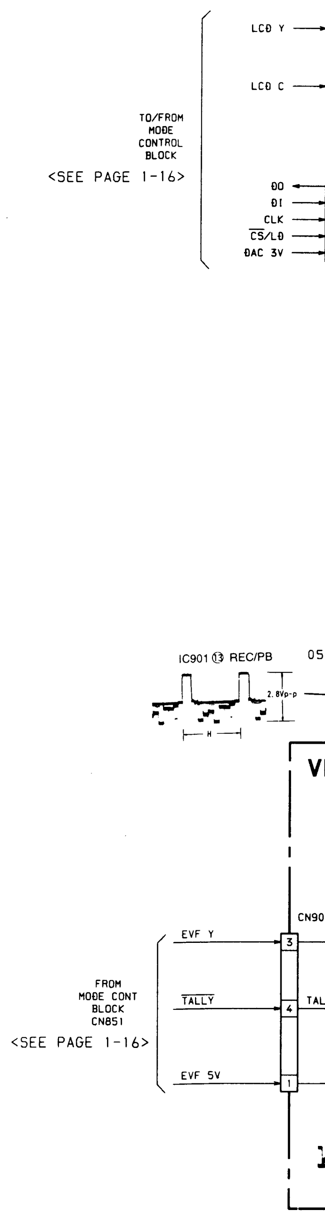
1-6. MODE CONTROL BLOCK DIAGRAM


DD-80 BOARD
(SEE PAGE 4-37)
S003 ZOOM
S001 START/STOP
S002 EJECT
S004 STANBY
DIG 3V
CN003
CN301
CN300
ZOOM SW
START/STOP SW
EJECT SW
CAM + STBY SWR
CAM + STBY SW
CF-42 BOARD
<SEE PAGE 2-35>
IC303
MODE CONTROL
CN480
ZOOM SW
SYS/ SW
EJECT SW
CAM + STBY SW
BATT SENSE
BATT/EXT
VTR UNREG
EVR 3V
IC301
INTIAL RESET
VCC
AVCC
V OUT
V IN
PS301
RESET
LI PREEND
PREEND
VRO
EVER 3V
BATT IN
CS
V BAT
D316
BH480
LI BATT
VC-167 BOARD
(SEE PAGE 4-38) <SEE PAGE 1-8>
S301 EDITSEARCH (+)
S302 EDITSEARCH (−)
S303 PLAY
S304 PAUSE
S306 FF
S305 REW
S307 STOP
KEY AD1
KEY AD0
MV RESET
MV STBY
CS MECAM
HI SI
HI SO
HI SCK
CC DOWN SW
PBV
V SYNC
VA PB MODE
TO/FROM SYSCON BLOCK
<SEE PAGE 1-9>
FL300
XOO
XOI
IC303 ④ REC/PB
1.7Vp-p
CAM DD ON
CAM HD
TO/FROM CAMERA BLOCK
<SEE PAGE 1-6>
TO VIDEO BLOCK
POWER MUTE
X302 32.768kHz
XTAL
(32.768kHz)
VOWI
VOBI
VOWO
VOBO
N.C.
REC VOW
REC VOB
OS VOW
EVF C
EVF Y
TO/FROM VIDEO BLOCK
<SEE PAGE 1-8>
XTL301 10MHz
XO
XI
IC303 ③ REC/PB
(10MHz)
2.3Vp-p
MA-266 BOARD
(SEE PAGE 4-30)
CN951
SIRCS VCC
POWER MUTE
DIG 5V
CN501
IC953
SIRCS
Q314 BUFFER
CN481
Q305 LED DRIVER
Q309, 310 LED DRIVER
TALLY LED
TALLY
EVF UNREG
EVF 5V
TO EVF BLOCK
<SEE PAGE 1-17, 19>
SIRCS SIG
SIRCS IN
CAM + STBY SW
EVF ON
Q315, 316 +5V SW
S501 PANEL OPEN
CN304
LCD Y
LCD C
DO
DI
CLK
CS/LD
DAC 3V
TO/FROM LCD/EVF BLOCK
<SEE PAGE 1-17, 19>
S951 CAMERA
S952 VTR
S953 T
FRONT ZOOM
S954 W
S955 START/STOP
D953 (FRONT TALLY)
CN954
CN305
VTR MODE SW
DIG 3V
ZOOM
START/STOP
TALLY
POWER MUTE
PANEL OPEN
DAC CS
S480 DATE (+)
S481 TIME (NEXT)
DATE SW
TIME SW
IC302
LANC I/O
VCC
UNREG
EVER 3V
VTR UNREG
LANC OUT
LANC IN
DATA IN
DATA OUT
LANC POWER ON
WAKE UP
CONT
DC
I/O
J480
LANC
S482 COUNTER RESET
S485 START/STOP MODEL
S/S
5SEC
KEY AD2
S303 END SEARCH
S302 DISPLAY
S301 TITLE
VTR DD ON
TO POWER BLOCK
<SEE PAGE 1-21>
CN301
LCD UNREG
S/S MODE SW
S305 COMMANDER
ON OFF
RMC OFF SW
PROGRAM AE
PANEL REVERSE
MIRROR ON
AE
REVERSE
CGH
B/A COUT
LCD ON
BL ON
CN302
IC304
Q311 SW
S488 BUZZER
BEEP
S484 BACK LIGHT
BACK LIGHT SW
S483 REC MODE
SP LP
REC LP SW
PANEL ON
BACK LIGHT ON
TRV22/212 MODEL
S486
STEADY
WIDE
ON ← OFF → ON
STEADY ON SW
WIDE ON SW
BRIGHT
NORMAL
S304 LCD BACK LIGHT
DIG 3V
H.P L
CN300 ①
FROM AUDIO BLOCK
<SEE PAGE 1-8>
TRV12/12E/12PK/22/112/212 MODEL
S300 D ZOOM
D ZOOM
Q307 +5V SW
TRV12:E, Hong Kong, Tourist/ TRV12E/12PK MODEL
MT 5V
RV301 VOLUME
D332
IC651
H.P/SP AMP
CN306
SP (+)
SP (−)
SPEAKER
J481 HEADPHONE
D322
D333

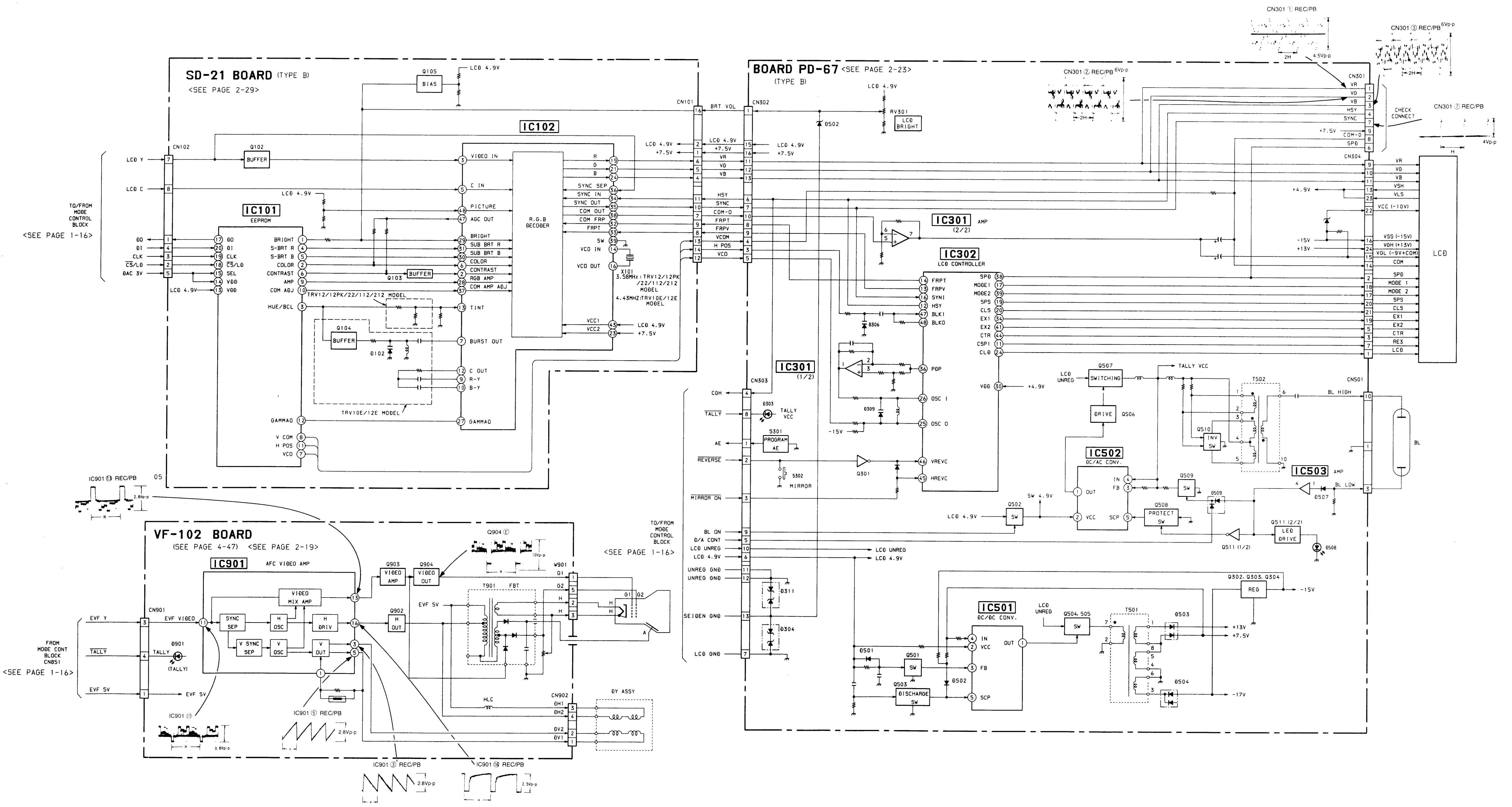
1-7. LCD/EVF BLOCK DIAGRAM (TYPE A)


SD-21 BOARD (TYPE A)
<SEE PAGE 2-26>
IC102
R.G.B DECODER
IC101
EEPROM
Q102
BUFFER
Q104
BUFFER
TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL
X101 3.58MHz
X101 4.43MHZ
CN101
CN102
LCD Y
LCD C
DD
DI
CLK
CS/LD
DAC 3.1V
LCD 4.9V
TO/FROM MODE CONTROL BLOCK
<SEE PAGE 1-16>
VIDEO IN
C IN
PICTURE
AGC OUT
BRIGHT
SUB BRT R
SUB BRT B
COLOR
CONTRAST
SUB CNT A
SUB CNT B
HUE
BURST OUT
SYNC IN
SYNC OUT
SYNC SEP
H FIL OUT
FRP
VCO IN
VCO OUT
VCC1
VCC2
BRT VOL
-7.5V
VR
VG
VB
HDB
SYNC
V COM
H POS
VCO
V ADJ
PD-67 BOARD (TYPE A) <SEE PAGE 2-20>
CN302
CN301
CN304
CN303
CN501
RV301 BRIGHT
CHECK CONNECT
CN301 ② REC/PB 6Vp-p
CN301 ① REC/PB
CN301 ③ REC/PB 6Vp-p
CN301 ⑦ REC/PB
4.5Vp-p
4Vp-p
2H
IC301
IC302
LCD CONTROL
SRT
RIGHT
DOWN
GSRT
GPCK
GRES
MCLK
CLR
OE
PHO IN
PHO OUT
OSC I
OSC O
PO
VDD
+4.9V
LCD
VSH
BCNT
VGH
VSS (-4.5V)
VSL
VGL
MODE 1
MODE 2
+11V
-18V
Q303
VSS GEN.
D305
D307
D303
TALLY VCC
S301
PROGRAM AE
Q301
SW
S302
MIRROR
CHG
TALLY
AE
REVERSE
MIRROR ON
BL ON
D/A CONT
LCD UNREG
LCD 4.9V
T502
Q506
DRIVE
Q507
SWITCHING
Q510
INV SW
IC502
DC/AC CONV.
IC503
Q509
Q508
PROTECT SW
Q511 (1/2)
BUFFER
Q511 (2/2)
LED DRIVE
D508
D509
Q502
BL HIGH
BL LOW
BL
IC501
DC/DC CONV.
Q501
Q503
DISCHARGE SW
Q504, 505
T501
IN
VCC
FB
SCP
OUT
VF-102 BOARD
(SEE PAGE 4-47) <SEE PAGE 2-19>
IC901
AFC VIDEO AMP
VIDEO MIX AMP
SYNC SEP
H OSC
H DRIV
V SYNC SEP
V OSC
V OUT
Q903
VIDEO AMP
Q904
VIDEO OUT
Q902
H OUT
T901 FBT
EVF 5V
W901
G1
G2
HLC
CN902
DH1
DH2
DV2
DV1
DY ASSY
CN901
EVF Y
EVF VIDEO
TALLY
D901
(TALLY)
FROM MODE CONT BLOCK CN851
<SEE PAGE 1-16>
IC901 ⑪
IC901 ⑬ REC/PB
IC901 ⑯ REC/PB
Q904 Ⓔ
IC901 ⑤ REC/PB
IC901 ③ REC/PB
2.8Vp-p
2.5Vp-p
10Vp-p
0.8Vp-p
H

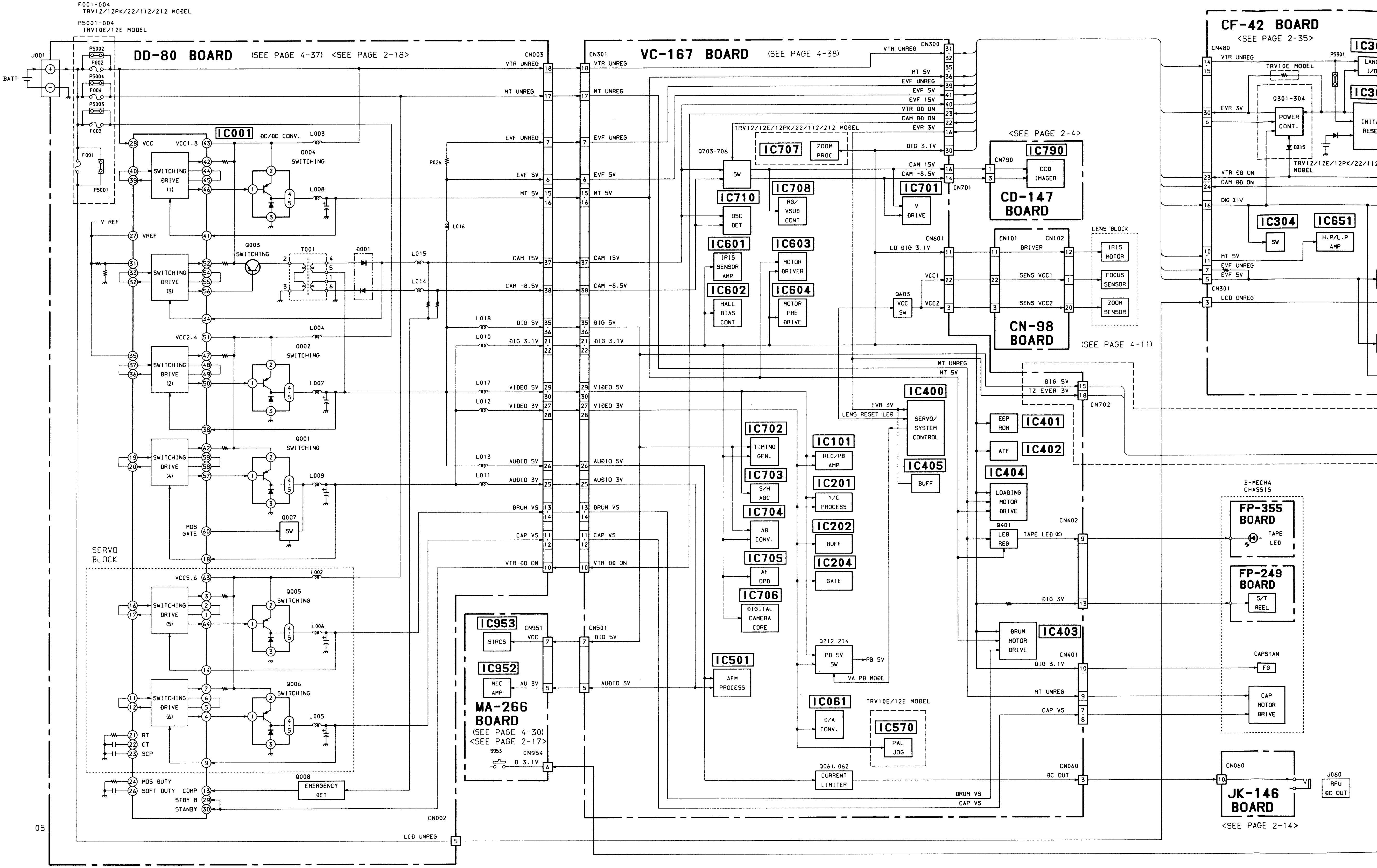
1-8. LCD/EVF BLOCK DIAGRAM

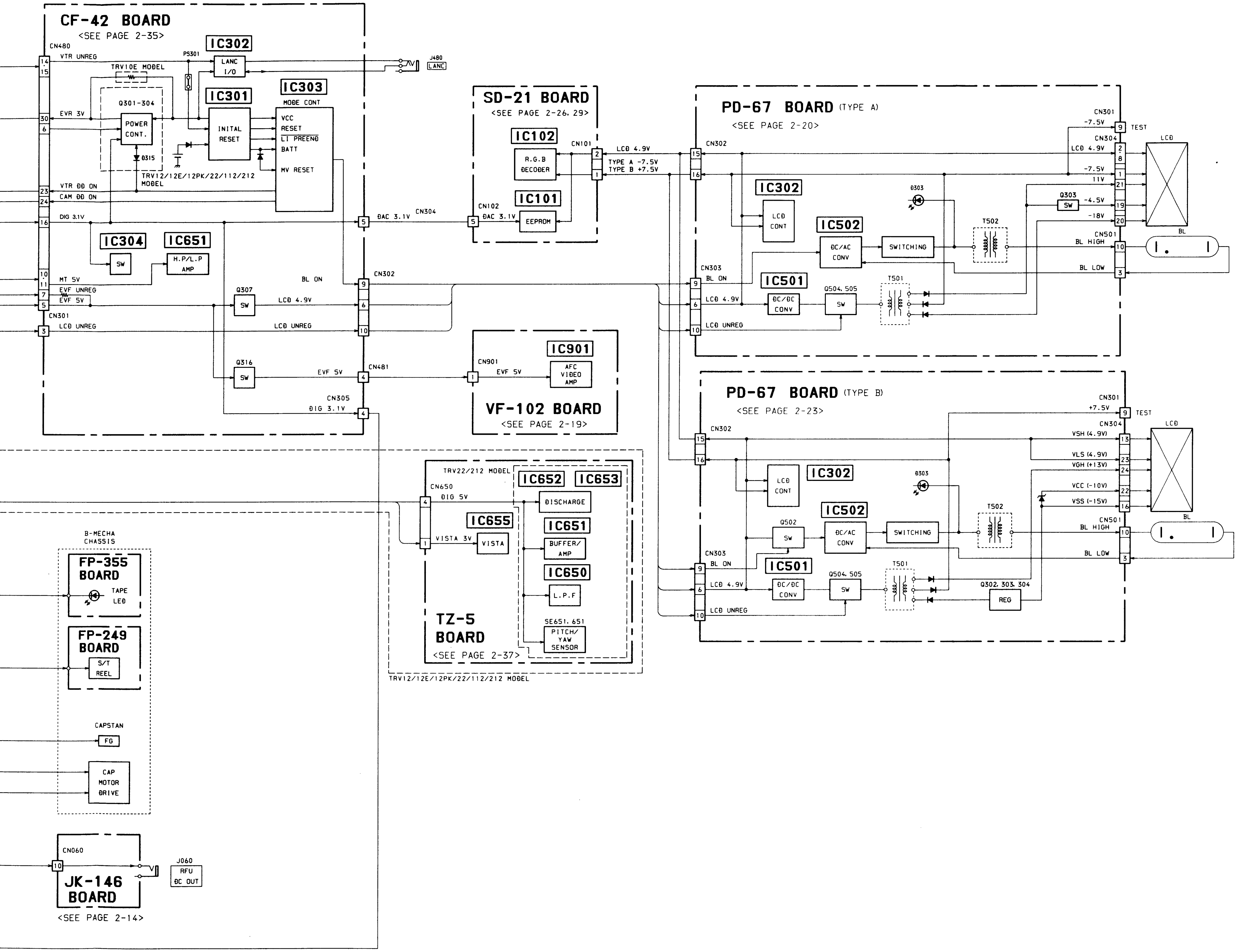

LCD Y
LCD C
TO/FROM MODE CONTROL BLOCK
<SEE PAGE 1-16>
DD
DI
CLK
CS/LD
DAC 3V
IC901 ⑬ REC/PB
FROM MODE CONT BLOCK CN851
<SEE PAGE 1-16>
EVF Y
TALLY
EVF 5V

8. LCD/EVF BLOCK DIAGRAM (TYPE B)


SD-21 BOARD (TYPE B)
<SEE PAGE 2-29>
IC102
R.G.B DECODER
IC101
EEPROM
Q102 BUFFER
Q103 BUFFER
Q104 BUFFER
Q105 BIAS
X101 3.58MHz:TRV12/12PK/22/112/212 MODEL
4.43MHz:TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL
TRV10E/12E MODEL
CN101
CN102
LCD Y
LCD C
DO
DI
CLK
CS/LD
DAC 3V
LCD 4.9V
+7.5V
VIDEO IN
C IN
PICTURE
AGC OUT
BRIGHT
SUB BRT R
SUB BRT B
COLOR
CONTRAST
RGB AMP
COM AMP ADJ
TINT
BURST OUT
C OUT
R-Y
B-Y
GAMMAO
SYNC SEP
SYNC IN
SYNC OUT
COM OUT
COM FRP
FRPT
SW
VCO IN
VCO OUT
VCC1
VCC2
HUE/BCL
V COM
H POS
VCO
BRT VOL
VR
VG
VB
HSY
SYNC
COM-O
FRPV
VCOM
TO/FROM MODE CONTROL BLOCK
<SEE PAGE 1-16>
BOARD PD-67 <SEE PAGE 2-23>
(TYPE B)
CN302
CN303
CN304
CN301
CN501
RV301 LCD BRIGHT
D502
IC301 AMP (2/2)
IC301 (1/2)
IC302 LCD CONTROLLER
FRPT
FRPV
SYNI
HSY
BLKI
BLKO
PDP
OSC I
OSC O
VREVC
HREVC
SPD
MODE1
MODE2
SPS
CLS
EX1
EX2
CTR
CSP1
CLD
VDD
+4.9V
LCD
VSH
VLS
VCC (-10V)
VSS (-15V)
VGH (+13V)
VGL (-9V+COM)
COM
MODE 1
MODE 2
RE3
CHECK CONNECT
CN301 ① REC/PB
CN301 ② REC/PB 6Vp-p
CN301 ③ REC/PB 6Vp-p
CN301 ⑦ REC/PB
4.5Vp-p
4Vp-p
2H
H
CGH
TALLY
D303 TALLY VCC
AE
S301 PROGRAM AE
REVERSE
S302 MIRROR
Q301
MIRROR ON
BL ON
D/A CONT
LCD UNREG
LCD 4.9V
UNREG GND
D311
SEIDEN GND
D304
LCD GND
Q507 SWITCHING
TALLY VCC
DRIVE Q506
T502
Q510 INV SW
IC502 DC/AC CONV.
IN
FB
OUT
VCC
SCP
Q509 SW
Q508 PROTECT SW
Q502 SW
SW 4.9V
D509
D507
IC503 AMP
BL HIGH
BL LOW
BL
Q511 (2/2) LED DRIVE
Q511 (1/2)
D508
Q302, Q303, Q304 REG
-15V
IC501 DC/DC CONV.
Q504, 505 SW
T501
D503
D504
+13V
+7.5V
-17V
D501
Q501 SW
D502
Q503 DISCHARGE SW
VF-102 BOARD
(SEE PAGE 4-47) <SEE PAGE 2-19>
IC901 AFC VIDEO AMP
SYNC SEP
H OSC
H DRIV
V SYNC SEP
V OSC
V OUT
VIDEO MIX AMP
Q903 VIDEO AMP
Q904 VIDEO OUT
Q902 H OUT
T901 FBT
HLC
W901
G1
G2
H
CN901
EVF Y
EVF VIDEO
TALLY
D901 (TALLY)
EVF 5V
CN902
DH1
DH2
DV2
DV1
DY ASSY
FROM MODE CONT BLOCK CN851
<SEE PAGE 1-16>
IC901 ⑬ REC/PB 2.8Vp-p
IC901 ⑪ 0.8Vp-p
IC901 ⑤ REC/PB 2.8Vp-p
IC901 ③ REC/PB 2.8Vp-p
IC901 ⑯ REC/PB 2.5Vp-p
Q904 Ⓔ 10Vp-p

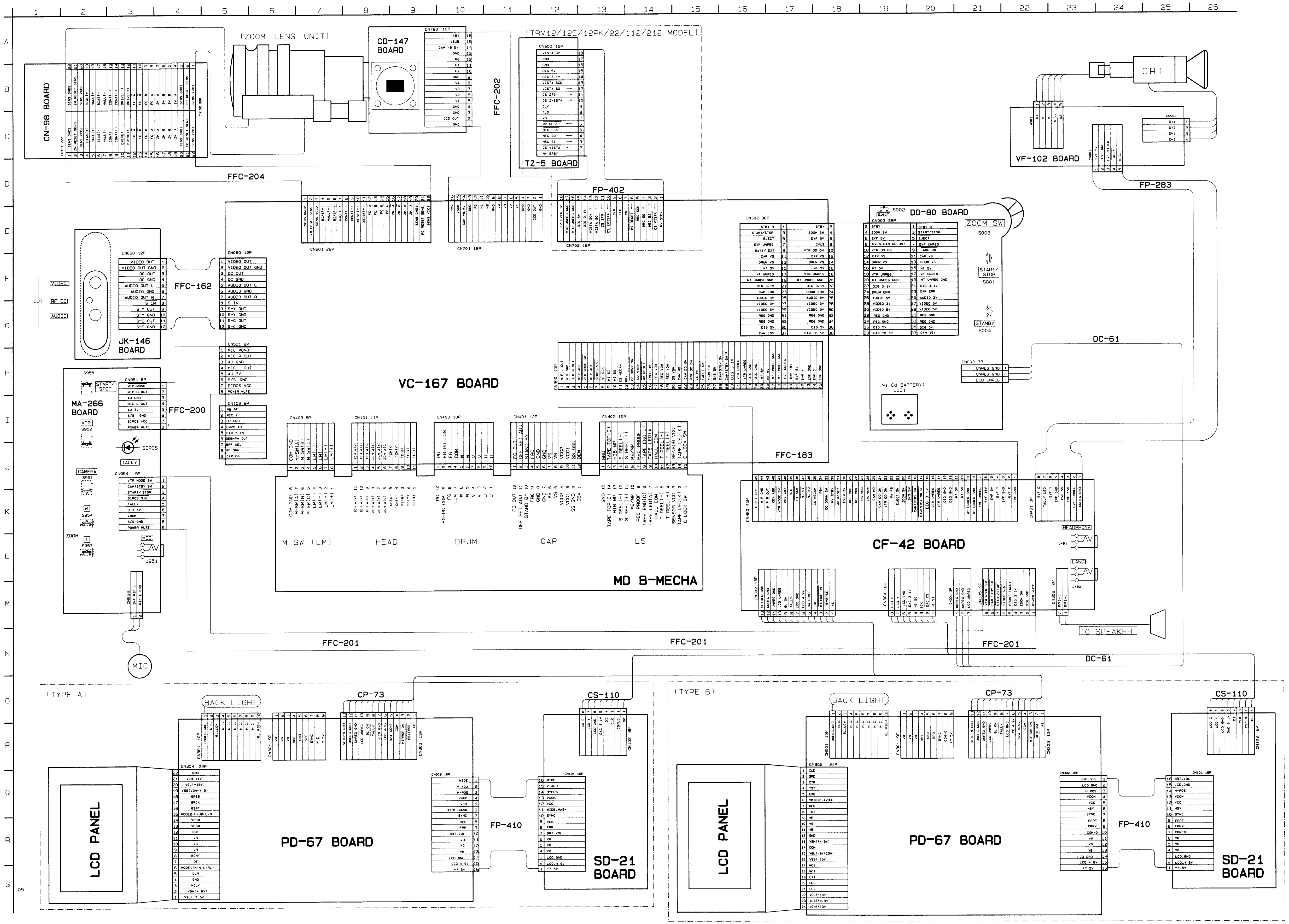
1-9. POWER BLOCK DIAGRAM


F001-004
TRV12/12PK/22/112/212 MODEL
PS001-004
TRV10E/12E MODEL
J001
BATT
PS002
F002
PS004
F004
PS003
F003
F001
PS001
DD-80 BOARD
(SEE PAGE 4-37) <SEE PAGE 2-18>
IC001
DC/DC CONV.
VCC
VCC1.3
L003
Q004
SWITCHING
SWITCHING DRIVE (1)
L008
V REF
VREF
Q003
SWITCHING
T001
D001
SWITCHING DRIVE (3)
L015
L014
R026
L016
L004
VCC2.4
Q002
SWITCHING
SWITCHING DRIVE (2)
L007
Q001
SWITCHING
SWITCHING DRIVE (4)
L009
MOS GATE
Q007
SW
SERVO BLOCK
VCC5.6
L002
Q005
SWITCHING
SWITCHING DRIVE (5)
L006
Q006
SWITCHING
SWITCHING DRIVE (6)
L005
RT
CT
SCP
MOS DUTY
SOFT DUTY
COMP
STBY B
STANBY
Q008
EMERGENCY DET
CN002
LCD UNREG
CN003
VTR UNREG
MT UNREG
EVF UNREG
EVF 5V
MT 5V
CAM 15V
CAM -8.5V
L018
DIG 5V
L010
DIG 3.1V
L017
VIDEO 5V
L012
VIDEO 3V
L013
AUDIO 5V
L011
AUDIO 3V
DRUM VS
CAP VS
VTR DD ON
CN301
VC-167 BOARD
(SEE PAGE 4-38)
CN300
VTR UNREG
MT 5V
EVF UNREG
EVF 5V
EVF 15V
VTR DD ON
CAM DD ON
EVR 3V
DIG 3.1V
CAM 15V
CAM -8.5V
TRV12/12E/12PK/22/112/212 MODEL
IC707
ZOOM PROC
Q703-706
SW
IC708
RG/VSUB CONT
IC701
V DRIVE
CN701
IC710
OSC DET
IC601
IRIS SENSOR AMP
IC603
MOTOR DRIVER
IC602
HALL BIAS CONT
IC604
MOTOR PRE DRIVE
CN601
LD DIG 3.1V
VCC1
Q603
VCC SW
VCC2
<SEE PAGE 2-4>
IC790
CCD IMAGER
CN790
CD-147 BOARD
CN101
CN102
DRIVER
SENS VCC1
SENS VCC2
CN-98 BOARD
(SEE PAGE 4-11)
LENS BLOCK
IRIS MOTOR
FOCUS SENSOR
ZOOM SENSOR
MT UNREG
MT 5V
DIG 5V
TZ EVER 3V
CN702
IC400
EVR 3V
LENS RESET LED
SERVO/SYSTEM CONTROL
IC405
BUFF
IC401
EEP ROM
IC402
ATF
IC404
LOADING MOTOR DRIVE
Q401
LED REG
TAPE LED (K)
CN402
DIG 3V
IC702
TIMING GEN.
IC703
S/H AGC
IC704
AD CONV.
IC705
AF OPD
IC706
DIGITAL CAMERA CORE
IC101
REC/PB AMP
IC201
Y/C PROCESS
IC202
BUFF
IC204
GATE
IC403
DRUM MOTOR DRIVE
CN401
DIG 3.1V
MT UNREG
CAP VS
Q212-214
PB 5V SW
PB 5V
VA PB MODE
IC501
AFM PROCESS
IC061
D/A CONV.
TRV10E/12E MODEL
IC570
PAL JOG
Q061, 062
CURRENT LIMITER
CN060
DC OUT
DRUM VS
CAP VS
IC953
SIRCS
CN951
VCC
IC952
MIC AMP
AU 3V
MA-266 BOARD
(SEE PAGE 4-30)
<SEE PAGE 2-17>
S953
CN954
D 3.1V
CN501
DIG 5V
AUDIO 3V
CF-42 BOARD
<SEE PAGE 2-35>
CN480
VTR UNREG
TRV10E MODEL
PS301
IC30
LANC I/O
Q301-304
POWER CONT.
EVR 3V
D315
INITIAL RESET
TRV12/12E/12PK/22/112 MODEL
VTR DD ON
CAM DD ON
DIG 3.1V
IC304
SW
IC651
H.P/L.P AMP
MT 5V
EVF UNREG
EVF 5V
CN301
LCD UNREG
B-MECHA CHASSIS
FP-355 BOARD
TAPE LED
FP-249 BOARD
S/T REEL
CAPSTAN
FG
CAP MOTOR DRIVE
CN060
JK-146 BOARD
<SEE PAGE 2-14>
J060
RFU DC OUT
05


CF-42 BOARD
<SEE PAGE 2-35>
CN480
VTR UNREG
TRV10E MODEL
PS301
IC302
LANC I/O
J480 LANC
IC301
INITAL RESET
IC303
MODE CONT
VCC
RESET
LI PREEND
BATT
MV RESET
Q301-304
POWER CONT.
D315
EVR 3V
TRV12/12E/12PK/22/112/212 MODEL
VTR DD ON
CAM DD ON
DIG 3.1V
DAC 3.1V
CN304
IC304
SW
IC651
H.P/L.P AMP
MT 5V
EVF UNREG
EVF 5V
CN301
LCD UNREG
BL ON
CN302
Q307
SW
LCD 4.9V
Q316
EVF 5V
CN481
CN305
DIG 3.1V
SD-21 BOARD
<SEE PAGE 2-26, 29>
IC102
R.G.B DECODER
CN101
LCD 4.9V
TYPE A -7.5V
TYPE B +7.5V
CN102
DAC 3.1V
IC101
EEPROM
CN901
EVF 5V
IC901
AFC VIDEO AMP
VF-102 BOARD
<SEE PAGE 2-19>
PD-67 BOARD (TYPE A)
<SEE PAGE 2-20>
CN301
-7.5V
TEST
CN304
LCD 4.9V
LCD
-7.5V
11V
Q303
SW
-4.5V
-18V
CN302
IC302
LCD CONT
D303
IC502
DC/AC CONV
SWITCHING
T502
CN501
BL HIGH
BL
BL LOW
CN303
BL ON
LCD 4.9V
LCD UNREG
IC501
DC/DC CONV
Q504, 505
SW
T501
PD-67 BOARD (TYPE B)
<SEE PAGE 2-23>
CN301
+7.5V
TEST
CN304
VSH (4.9V)
VLS (4.9V)
VGH (+13V)
VCC (-10V)
VSS (-15V)
LCD
CN302
LCD CONT
IC302
D303
Q502
SW
IC502
DC/AC CONV
SWITCHING
T502
CN501
BL HIGH
BL
BL LOW
CN303
BL ON
LCD 4.9V
LCD UNREG
IC501
DC/DC CONV
Q504, 505
SW
T501
Q302, 303, 304
REG
TRV22/212 MODEL
CN650
DIG 5V
VISTA 3V
IC652
IC653
DISCHARGE
IC655
VISTA
IC651
BUFFER/AMP
IC650
L.P.F
SE651, 651
PITCH/YAW SENSOR
TZ-5 BOARD
<SEE PAGE 2-37>
TRV12/12E/12PK/22/112/212 MODEL
B-MECHA CHASSIS
FP-355 BOARD
TAPE LED
FP-249 BOARD
S/T REEL
CAPSTAN
FG
CAP MOTOR DRIVE
CN060
JK-146 BOARD
<SEE PAGE 2-14>
J060
RFU DC OUT

SECTION 2
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

2-1. FRAME SCHEMATIC DIAGRAM


CN-98 BOARD
(ZOOM LENS UNIT)
CD-147 BOARD
FFC-202
(TRV12/12E/12PK/22/112/212 MODEL)
TZ-5 BOARD
CRT
VF-102 BOARD
FP-283
FFC-204
FP-402
DD-80 BOARD
ZOOM SW
S003
START/STOP
S001
STANBY
S004
(Ni Cd BATTERY)
J001
DC-61
JK-146 BOARD
FFC-162
VIDEO
RF DC
AUDIO
OUT
MA-266 BOARD
FFC-200
VTR
CAMERA
SIRCS
TALLY
ZOOM
MIC
J951
VC-167 BOARD
FFC-183
M SW (LM)
HEAD
DRUM
CAP
LS
MD B-MECHA
CF-42 BOARD
HEADPHONE
LANC
TO SPEAKER
FFC-201
(TYPE A)
(TYPE B)
BACK LIGHT
CP-73
CS-110
LCD PANEL
PD-67 BOARD
FP-410
SD-21 BOARD

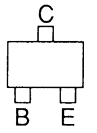
FRAME SCHEMATIC DIAGRAM

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- •—— : indicated a lead wire mounted on the component side.
- ▬ :Pattern from the side which enables seeing.
  (The other layers' patterns are not indicated.)
- ● :Through hole is omitted.
- Printed wiring board which has four layers structure but inner two layers' patterns are omitted.

Caution:
SIDE A: The pattern face side which is seen when the upper case is opened.
SIDE B: The opposite pattern face side to the pattern seen when the upper case is opened.

- Chip parts (3-terminal transistor)



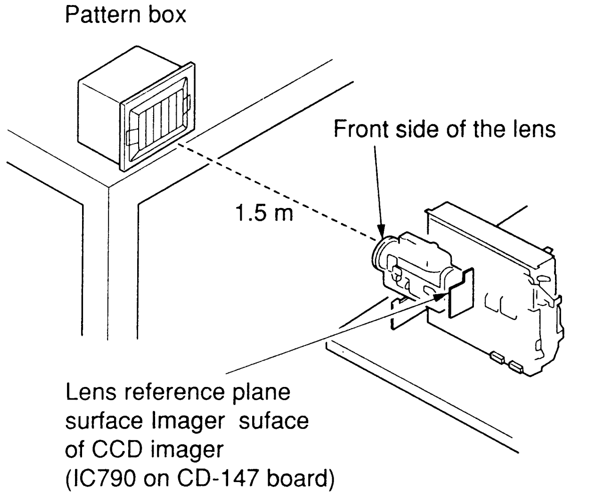
C: Collector
B: Base
E: Emitter

- **For schematic diagrams.**
- Caution when replacing chip parts..
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistor are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ: 1000Ω, MΩ, : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μ μF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ▭ : nonflammable resistor.
- ∿ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ▭ : adjustment for repair. ⋆
- ━━ : B+ Line. ⋆
- ▬▬▬ : B− Line. ⋆
- ⇨ : IN/OUT direction of (+,−) B LINE. ⋆
- Circled numbers refer to waveforms. ⋆
- Signal name

*E/−L→E/$\overline{\text{L}}$ *−VAPB→$\overline{\text{VAPB}}$
−EDIT→$\overline{\text{EDIT}}$ *VAPB→VAPB

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values * and reference waveforms.
  (VOM of DC 10 MΩ input impedance is used.).
- Voltage values change depending upon input impedance of VOM used.)

1. Connection


Pattern box
Front side of the lens
1.5 m
Lens reference plane
surface Imager suface
of CCD imager
(IC790 on CD-147 board)

2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

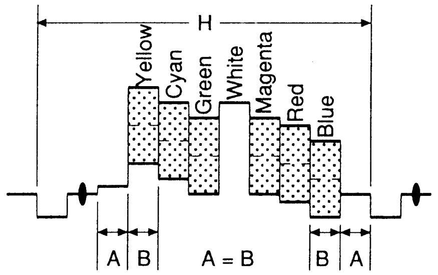

H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A = B
B
A

Fig. a (Video output terminal output waveform)

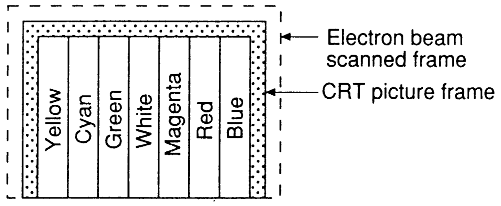

Electron beam scanned frame
CRT picture frame
Yellow
Cyan
Green
White
Magenta
Red
Blue

Fig. b (Picture on monitor TV)

NOTE: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note: Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spéc-ifie.

When indicating parts by reference number, please include the board name.

- ⋆ : indicated by the color red.

2-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

(SEE PAGE □□) : Pages on the original service manual.
<SEE PAGE □□> : Pages on this service manual.

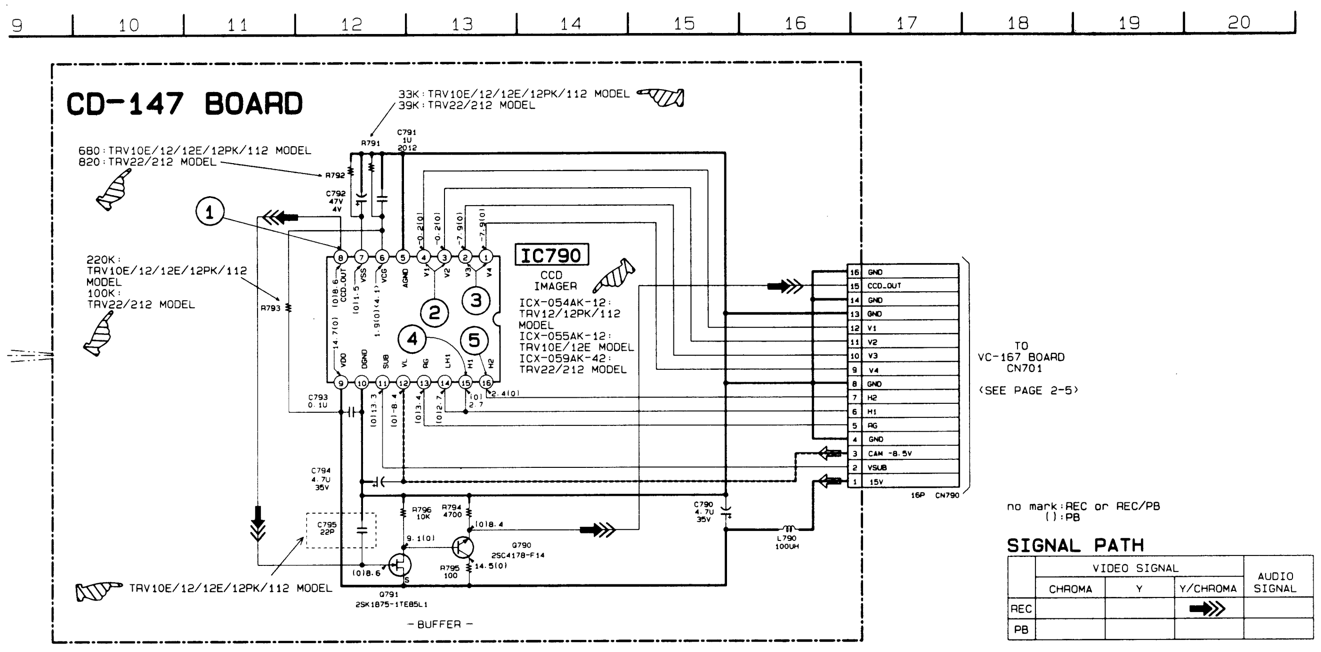
CD-147 (CCD IMAGER) SCHEMATIC DIAGRAM

• See page original service manual 4-13 for CD-147 BOARD printed wiring board.

– Ref. No. CD-147 Board; 2,000 Series –

☞:Points changed parts.

(PAGE4-11, 12 LOCATION A-F, 9-19)


9
10
11
12
13
14
15
16
17
18
19
20
CD-147 BOARD
33K : TRV10E/12/12E/12PK/112 MODEL
39K : TRV22/212 MODEL
680 : TRV10E/12/12E/12PK/112 MODEL
820 : TRV22/212 MODEL
R791
C791 1U 2012
R792
C792 47V 4V
1
220K : TRV10E/12/12E/12PK/112 MODEL
100K : TRV22/212 MODEL
R793
CCD_OUT
VSS
VCG
AGND
V1
V2
V3
V4
VDD
DGND
SUB
VL
RG
LH1
H1
H2
IC790
CCD IMAGER
ICX-054AK-12 : TRV12/12PK/112 MODEL
ICX-055AK-12 : TRV10E/12E MODEL
ICX-059AK-42 : TRV22/212 MODEL
2
3
4
5
C793 0.1U
C794 4.7U 35V
C795 22P
R796 10K
R794 4700
Q790 2SC4178-F14
R795 100
Q791 2SK1875-1TE85L1
- BUFFER -
C790 4.7U 35V
L790 100UH
TRV10E/12/12E/12PK/112 MODEL
16 GND
15 CCD_OUT
14 GND
13 GND
12 V1
11 V2
10 V3
9 V4
8 GND
7 H2
6 H1
5 RG
4 GND
3 CAM -8.5V
2 VSUB
1 15V
16P CN790
TO VC-167 BOARD CN701
<SEE PAGE 2-5>

no mark : REC or REC/PB
( ) : PB

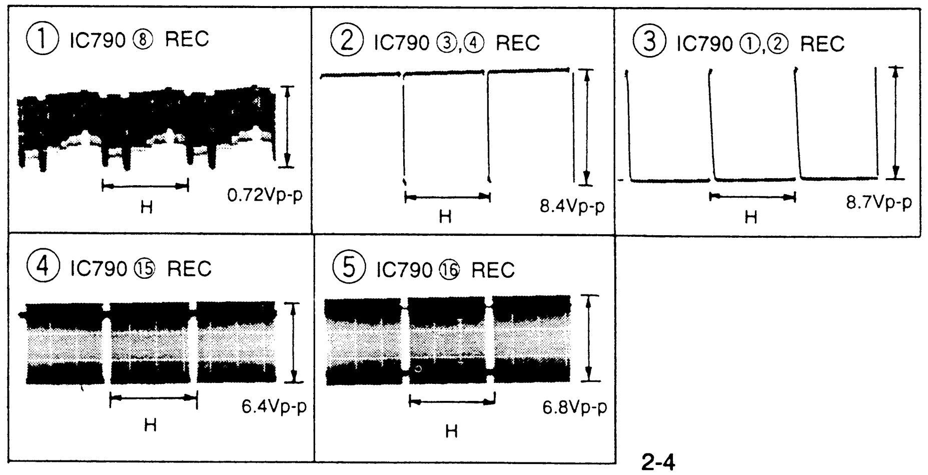
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			➡»	
PB				

Precautions Upon Replacing CCD Imager

- The CD-147 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

CD-147 BOARD



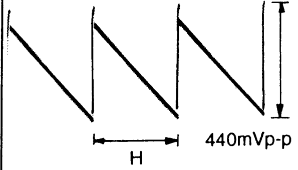
VC-167 (CAMERA 2) SCHEMATIC DIAGRAM

– Ref. No. VC-167 Board; 1,000 Series –

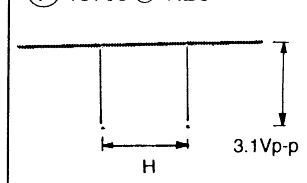
- **See page original service manual 4-7 for VC-167 BOARD printed wiring board.**

VC-167 BOARD

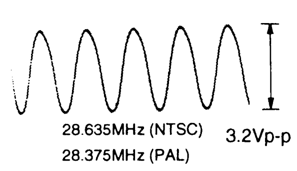
① IC701 ① REC



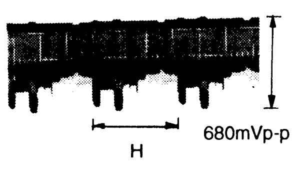
⑦ IC703 ㉔ REC



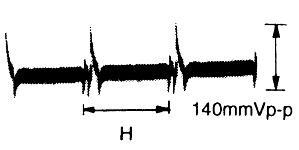
② IC702 ⑤ REC/PB



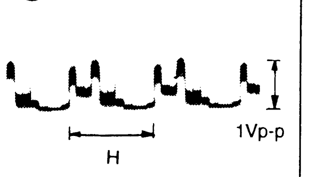
⑧ IC703 ㉕ ,㉖ REC



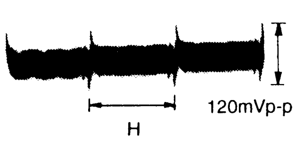
③ IC702 ㉝ REC



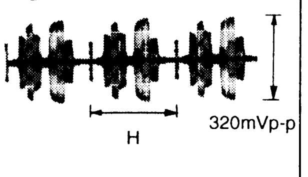
⑨ IC704 ㊴ REC



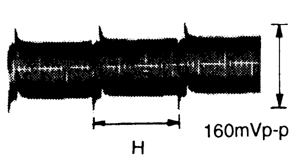
④ IC702 ㉞ REC



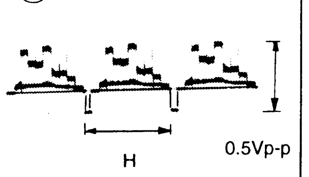
⑩ IC706 ⑳ REC



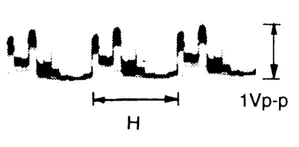
⑤ IC702 ㉟ REC



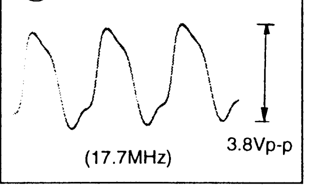
⑪ IC706 ㉓ REC

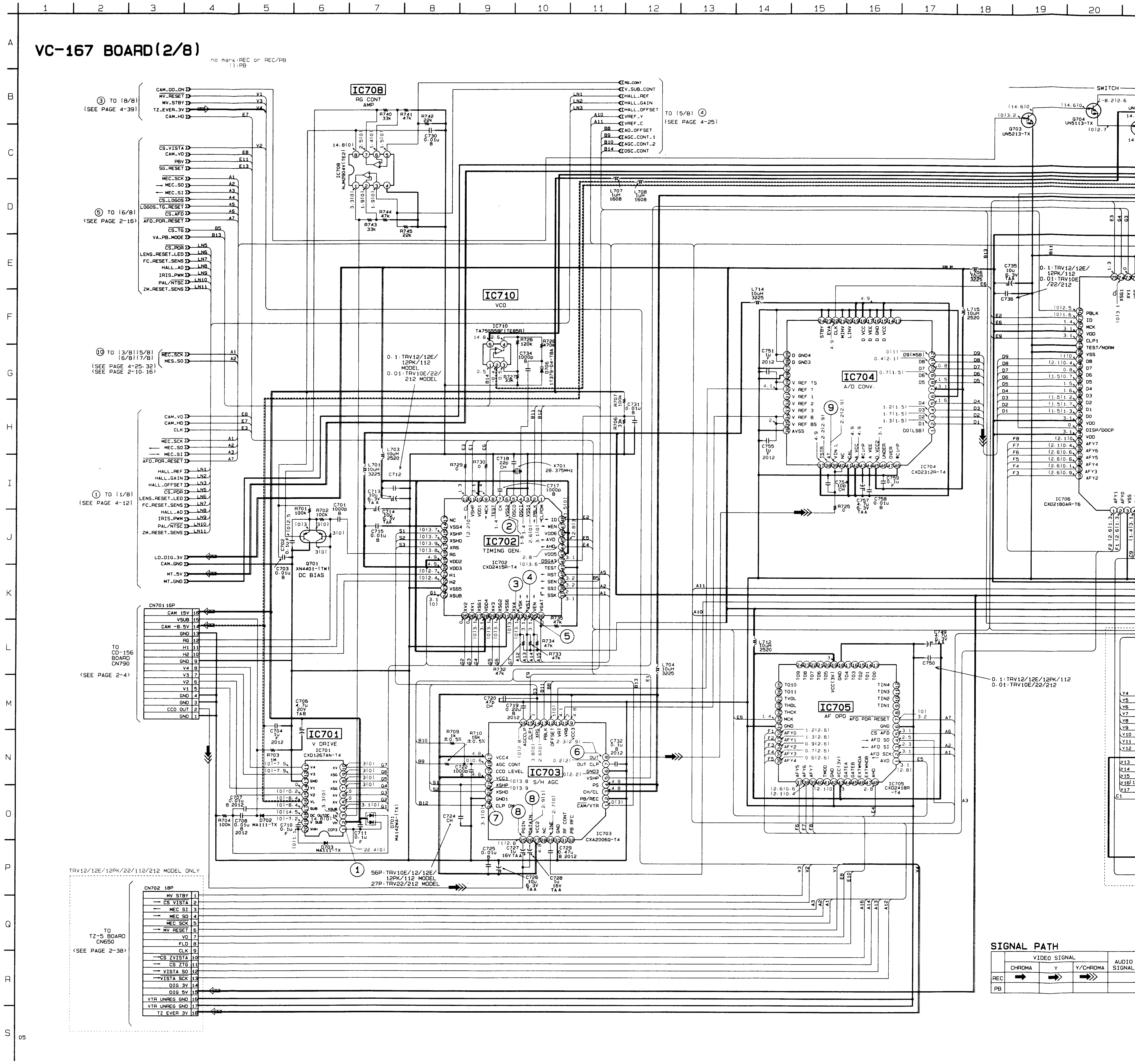


⑥ IC703 ⑧ REC



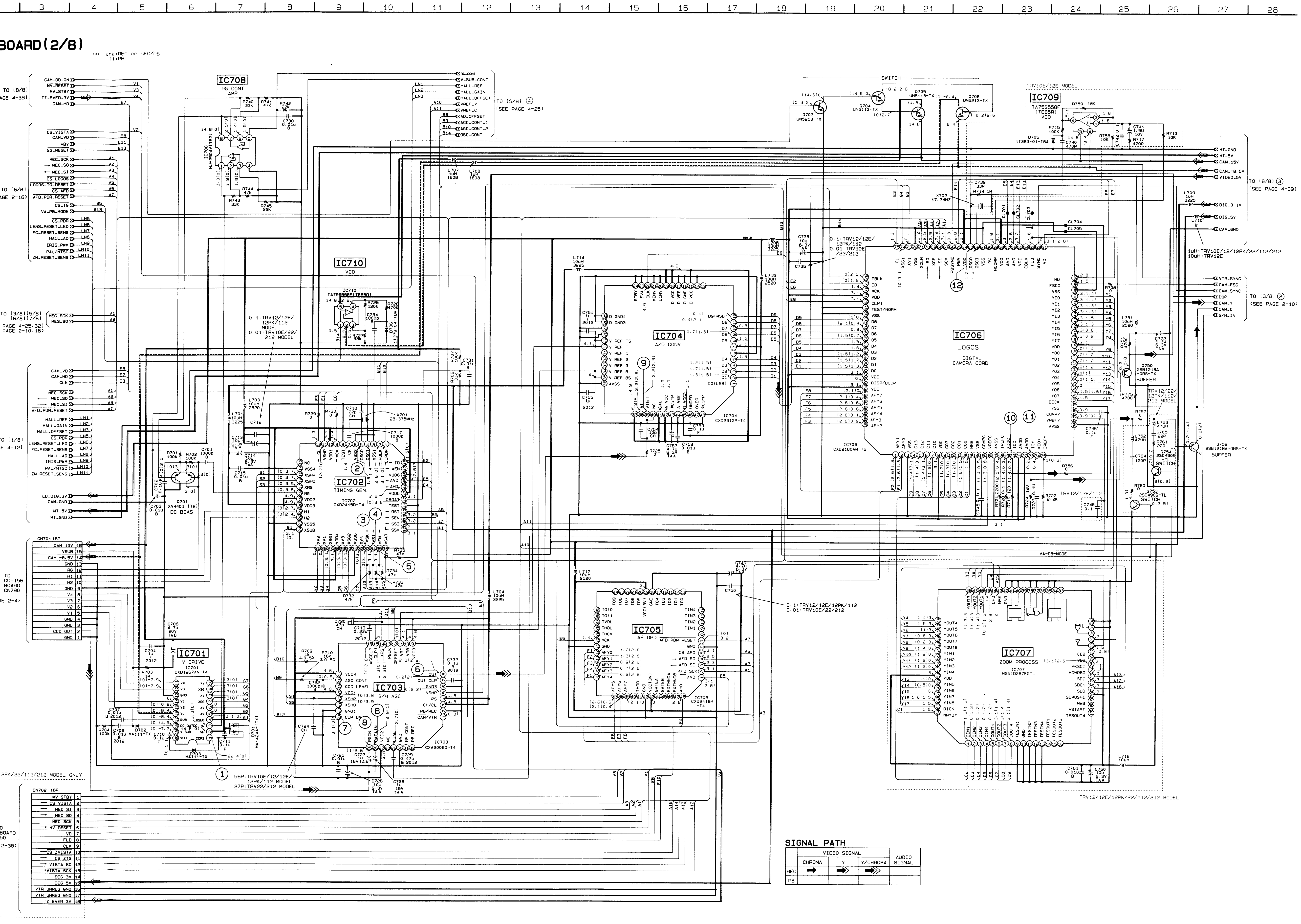
⑫ IC706 ㊸ REC (PAL)




VC-167 BOARD(2/8)
no mark:REC or REC/PB
( ):PB
IC708
RG CONT AMP
IC710
VCO
IC702
TIMING GEN.
IC701
V DRIVE
IC703
S/H AGC
IC704
A/D CONV.
IC705
AF OPD
Q701
XN4401-(TW)
DC BIAS
③ TO (8/8) (SEE PAGE 4-39)
⑤ TO (6/8) (SEE PAGE 2-16)
⑩ TO (3/8)(5/8)(6/8)(7/8) (SEE PAGE 4-25,32) (SEE PAGE 2-10,16)
① TO (1/8) (SEE PAGE 4-12)
TO (5/8) ④ (SEE PAGE 4-25)
CN701 16P
TO CD-156 BOARD CN790 (SEE PAGE 2-4)
CN702 18P
TO TZ-5 BOARD CN650 (SEE PAGE 2-38)
TRV12/12E/12PK/22/112/212 MODEL ONLY
56P:TRV10E/12/12E/12PK/112 MODEL
27P:TRV22/212 MODEL
SWITCH
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB

BOARD (2/8)

no mark:REC or REC/PB
( ):PB


IC708
RG CONT AMP
IC710
VCO
IC704
A/D CONV.
IC706
LOGOS
DIGITAL CAMERA CORD
IC709
TA75S558F (TE85R)
VCO
IC702
TIMING GEN.
CXD2415R-T4
IC701
V DRIVE
CXD1267AN-T4
IC703
S/H AGC
CXA2006Q-T4
IC705
AF OPD
CXD2418R-T4
IC707
ZOOM PROCESS
HG51D267FGTL
Q701
XN4401-(TW)
DC BIAS
Q750
2SB1218A-QRS-TX
BUFFER
Q752
2SB1218A-QRS-TX
BUFFER
Q753
2SC4909-TL
SWITCH
Q754
2SC4909-TL
SWITCH
SWITCH
Q703
UN5213-TX
Q704
UN5113-TX
Q705
UN5113-TX
Q706
UN5213-TX
X701
28.375MHz
X702
17.7MHz
CN701 16P
CN702 18P
TO CD-156 BOARD CN790
TO (8/8) ③
(SEE PAGE 4-39)
TO (3/8) ②
(SEE PAGE 2-10)
TO (5/8) ④
(SEE PAGE 4-25)
TRV10E/12E MODEL
TRV12/12E/12PK/22/112/212 MODEL
TRV12/12E/112
0.1:TRV12/12E/12PK/112 MODEL
0.01:TRV10E/22/212 MODEL
56P:TRV10E/12/12E/12PK/112 MODEL
27P:TRV22/212 MODEL
1uH:TRV10E/12/12PK/22/112/212
10uH:TRV12E
VA-PB-MODE

SIGNAL PATH

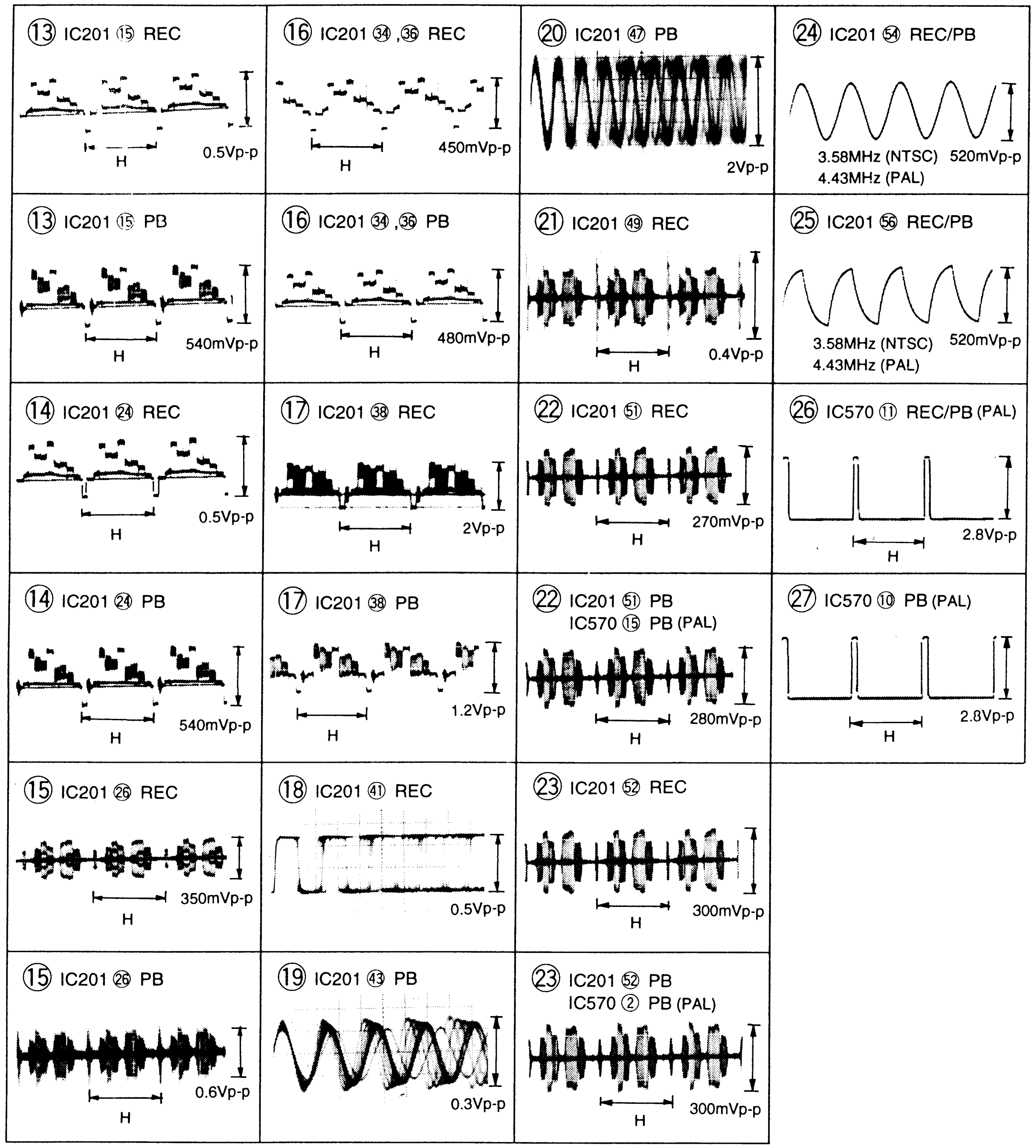
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛	⇛	
PB				

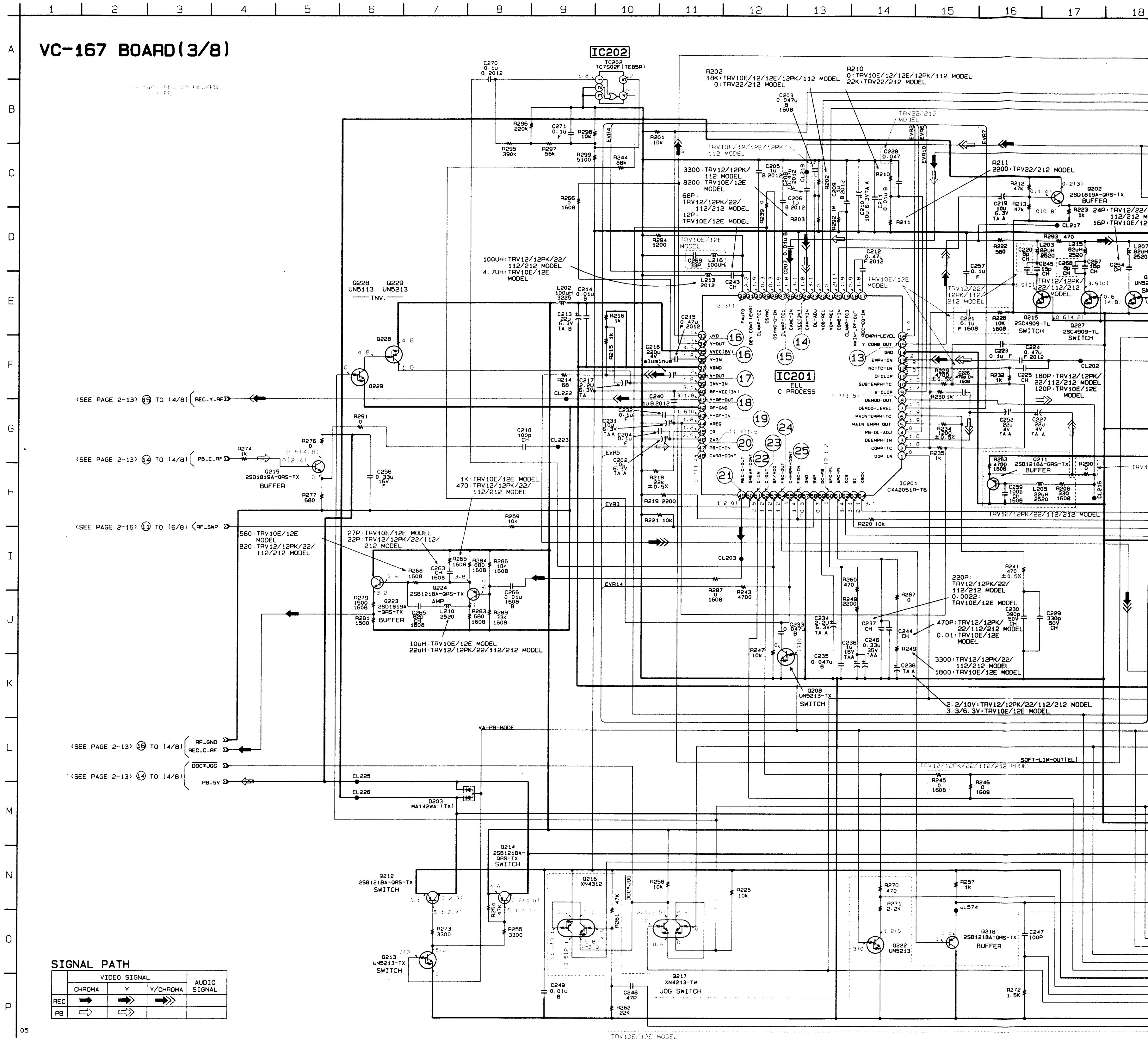
VC-167 (CAMERA 3) SCHEMATIC DIAGRAM

– Ref. No. VC-167 Board; 1,000 Series –

- **See page original service manual 4-7 for VC-167 BOARD printed wiring board.**

VC-167 BOARD

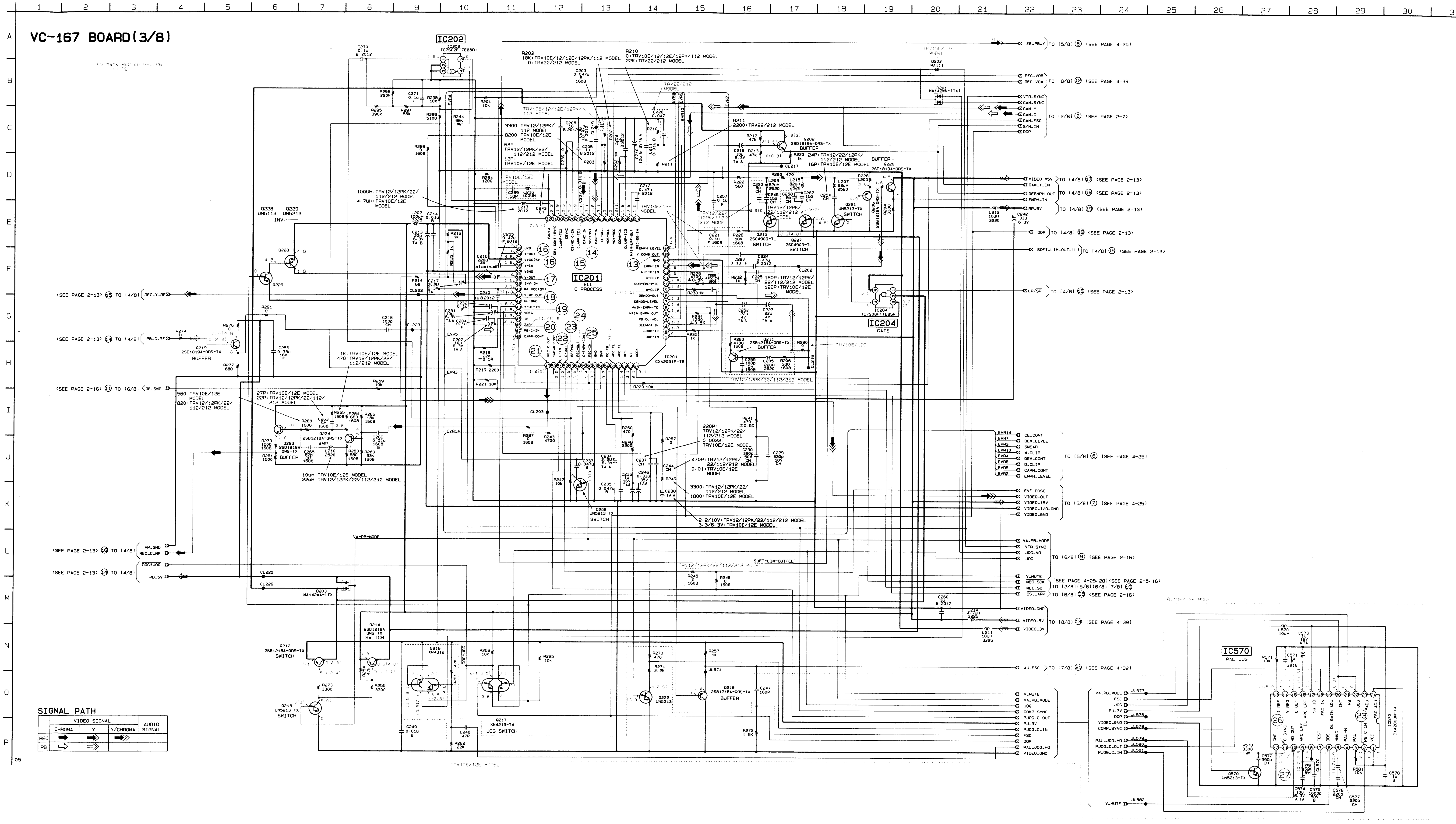



1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
VC-167 BOARD(3/8)
IC202
IC202 TC7S02F(TE85R)
IC201
CXA2051R-T6
IC201 ELL C PROCESS
R202 18K:TRV10E/12/12E/12PK/112 MODEL 0:TRV22/212 MODEL
R210 0:TRV10E/12/12E/12PK/112 MODEL 22K:TRV22/212 MODEL
R211 2200:TRV22/212 MODEL
Q202 2SD1819A-QRS-TX BUFFER
Q215 2SC4909-TL SWITCH
Q227 2SC4909-TL SWITCH
Q228 UN5113
Q229 UN5213
INV.
Q219 2SD1819A-QRS-TX BUFFER
Q223 2SD1819A-QRS-TX BUFFER
Q224 2SB1218A-QRS-TX AMP
Q211 2SB1218A-QRS-TX BUFFER
Q208 UN5213-TX SWITCH
Q214 2SB1218A-QRS-TX SWITCH
Q212 2SB1218A-QRS-TX SWITCH
Q213 UN5213-TX SWITCH
Q216 XN4312
Q217 XN4213-TW JOG SWITCH
Q222 UN5213
Q218 2SB1218A-QRS-TX BUFFER
D203 MA142WA-(TX)
(SEE PAGE 2-13) ⑮ TO (4/8) REC_Y_RF
(SEE PAGE 2-13) ⑭ TO (4/8) PB_C_RF
(SEE PAGE 2-16) ⑬ TO (6/8) RF_SWP
(SEE PAGE 2-13) ⑮ TO (4/8) RF_GND REC_C_RF
(SEE PAGE 2-13) ⑭ TO (4/8) DOC_JOG PB_5V
VA-PB-MODE
SOFT-LIM-OUT(EL)
TRV12/12PK/22/112/212 MODEL
TRV10E/12E MODEL
2.2/10V:TRV12/12PK/22/112/212 MODEL
3.3/6.3V:TRV10E/12E MODEL
3300:TRV12/12PK/22/112/212 MODEL
1800:TRV10E/12E MODEL
10uH:TRV10E/12E MODEL
22uH:TRV12/12PK/22/112/212 MODEL
1K:TRV10E/12E MODEL
470:TRV12/12PK/22/112/212 MODEL
560:TRV10E/12E MODEL
820:TRV12/12PK/22/112/212 MODEL
27P:TRV10E/12E MODEL
22P:TRV12/12PK/22/112/212 MODEL
100UH:TRV12/12PK/22/112/212 MODEL
4.7UH:TRV10E/12E MODEL
180P:TRV12/12PK/22/112/212 MODEL
120P:TRV10E/12E MODEL
220P:TRV12/12PK/22/112/212 MODEL
0.0022:TRV10E/12E MODEL
470P:TRV12/12PK/22/112/212 MODEL
0.01:TRV10E/12E MODEL
05

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡	
PB	⇨	⇨	⇨	

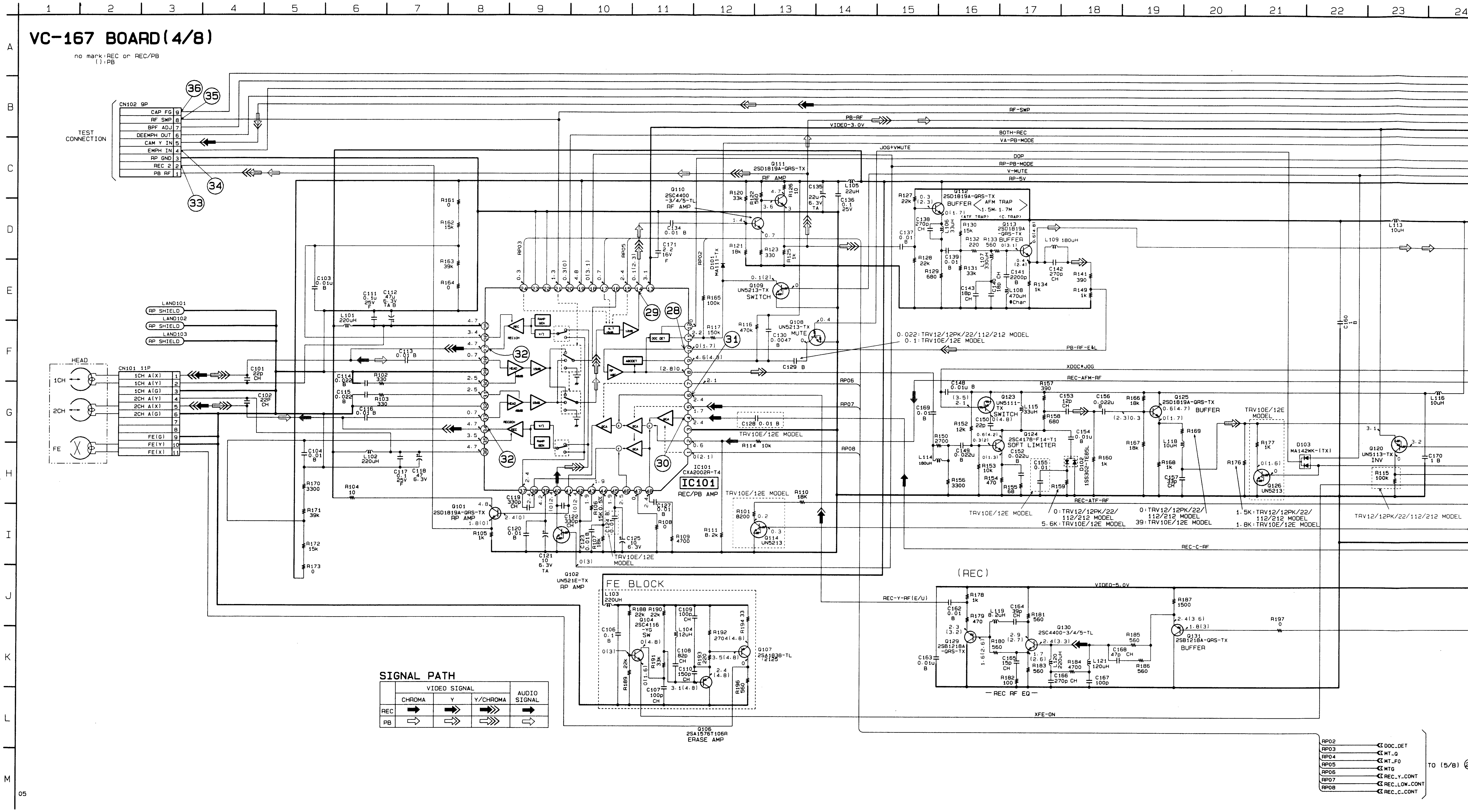
VC-167 BOARD(3/8)


IC201
ELL C PROCESS
CXA2051R-T6
IC202
TC7S02F(TE85R)
IC204
TC7S08F(TE85R)
GATE
IC570
PAL JOG
CXA2003N-T4
Q202 2SD1819A-QRS-TX BUFFER
Q215 2SC4909-TL SWITCH
Q227 2SC4909-TL SWITCH
Q221 UN5213-TX SWITCH
Q226 2SD1819A-QRS-TX BUFFER
Q211 2SB1218A-QRS-TX BUFFER
Q219 2SD1819A-QRS-TX BUFFER
Q223 2SD1819A-QRS-TX BUFFER
Q224 2SB1218A-QRS-TX AMP
Q228 UN5113
Q229 UN5213
INV.
Q208 UN5213-TX SWITCH
Q212 2SB1218A-QRS-TX SWITCH
Q213 UN5213-TX SWITCH
Q214 2SB1218A-QRS-TX SWITCH
Q216 XN4312
Q217 XN4213-TW JOG SWITCH
Q218 2SB1218A-QRS-TX BUFFER
Q222 UN5213
Q570 UN5213-TX
D202 MA111
D201 MA142WK-(TX)
D203 MA142WA-(TX)
EE.PB.Y TO (5/8) ⑧ (SEE PAGE 4-25)
REC.VOB
REC.VON TO (8/8) ⑫ (SEE PAGE 4-39)
VTR.SYNC
CAM.SYNC
CAM.Y
CAM.C
CAM.FSC
S/H.IN
DOP TO (2/8) ② (SEE PAGE 2-7)
VIDEO.+5V
CAM.Y.IN TO (4/8) ⑰ (SEE PAGE 2-13)
DEEMPH.OUT
EMPH.IN TO (4/8) ⑱ (SEE PAGE 2-13)
RP.5V TO (4/8) ⑲ (SEE PAGE 2-13)
DOP TO (4/8) ⑳ (SEE PAGE 2-13)
SOFT.LIM.OUT.(L) TO (4/8) ㉑ (SEE PAGE 2-13)
LP/SP TO (4/8) ⑯ (SEE PAGE 2-13)
(SEE PAGE 2-13) ⑮ TO (4/8) REC.Y.RF
(SEE PAGE 2-13) ⑭ TO (4/8) PB.C.RF
(SEE PAGE 2-16) ⑪ TO (6/8) RF.SWP
(SEE PAGE 2-13) ⑯ TO (4/8) RP.GND REC.C.RF
(SEE PAGE 2-13) ⑭ TO (4/8) DOC•JOG PB.5V
CE.CONT
DEM.LEVEL
SMEAR
W.CLIP
DEV.CONT
D.CLIP
CARR.CONT
EMPH.LEVEL TO (5/8) ⑥ (SEE PAGE 4-25)
EVF.DDSC
VIDEO.OUT
VIDEO.+5V
VIDEO.I/O.GND
VIDEO.GND TO (5/8) ⑦ (SEE PAGE 4-25)
VA.PB.MODE
VTR.SYNC
JOG.VD
JOG TO (6/8) ⑨ (SEE PAGE 2-16)
V.MUTE
MEC.SCK (SEE PAGE 4-25.28) (SEE PAGE 2-5.16)
MEC.SO TO (2/8) (5/8) (6/8) (7/8) ⑩
CS.LARK TO (6/8) ㉕ (SEE PAGE 2-16)
VIDEO.GND
VIDEO.5V TO (8/8) ⑬ (SEE PAGE 4-39)
VIDEO.3V
AU.FSC TO (7/8) ㉑ (SEE PAGE 4-32)
V.MUTE
VA.PB.MODE
JOG
COMP.SYNC
PJOG.C.OUT
PJ.3V
PJOG.C.IN
FSC
DOP
PAL.JOG.HD
VIDEO.GND
SOFT-LIM-OUT(EL)
VA-PB-MODE
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB

VC-167 (VIDEO 1) SCHEMATIC DIAGRAM

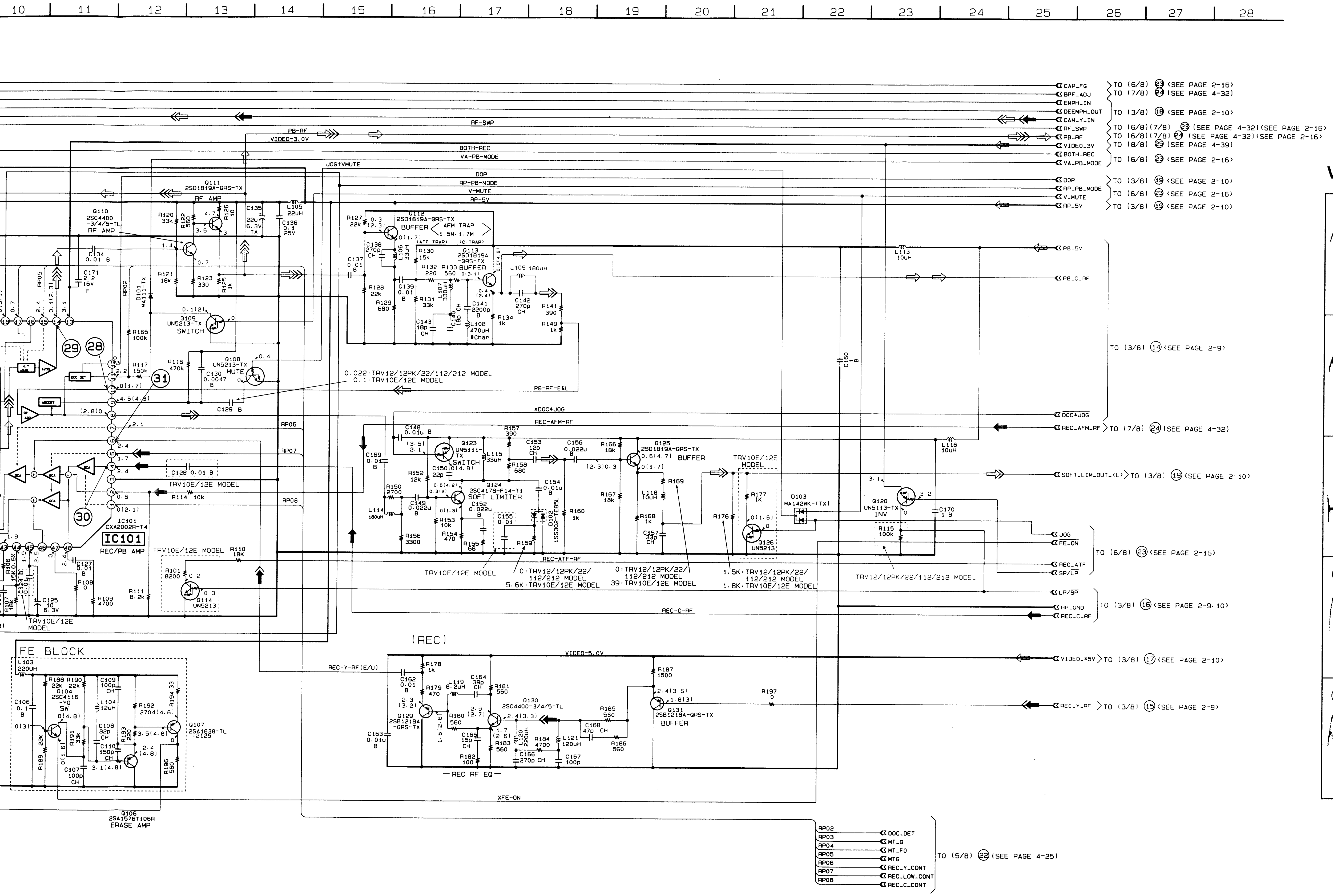
– Ref. No. VC-167 Board; 1,000 Series –

- **See page original service manual 4-7 for VC-167 BOARD printed wiring board.**

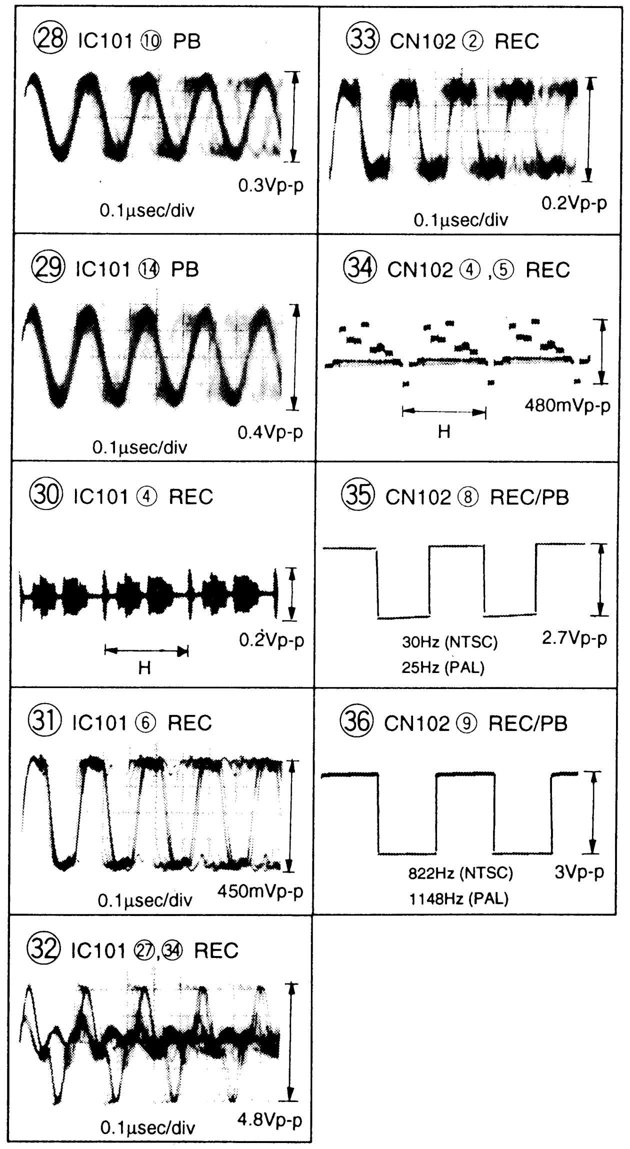

VC-167 BOARD(4/8)
no mark:REC or REC/PB
( ):PB
CN102 9P
TEST CONNECTION
CAP FG
RF SWP
BPF ADJ
DEEMPH OUT
CAM Y IN
EMPH IN
RP GND
REC 2
PB RF
HEAD
1CH
2CH
FE
CN101 11P
LAND101 RP SHIELD
LAND102 RP SHIELD
LAND103 RP SHIELD
IC101 CXA2002R-T4
IC101
REC/PB AMP
Q101 2SD1819A-QRS-TX RP AMP
Q102 UN521E-TX RP AMP
Q106 2SA1576T106R ERASE AMP
Q108 UN5213-TX MUTE
Q109 UN5213-TX SWITCH
Q110 2SC4400-3/4/5-TL RF AMP
Q111 2SD1819A-QRS-TX RF AMP
Q112 2SD1819A-QRS-TX BUFFER
Q113 2SD1819A-QRS-TX BUFFER
AFM TRAP 1.5M, 1.7M
Q114 UN5213
Q123 UN5111-TX SWITCH
Q124 2SC4178-F14-T1 SOFT LIMITER
Q125 2SD1819A-QRS-TX BUFFER
Q120 UN5113-TX INV
Q126 UN5213
D103 MA142WK-(TX)
FE BLOCK
Q104 2SC4116-YG SW
Q107 2SA1838-TL
(REC)
Q129 2SB1218A-QRS-TX
Q130 2SC4400-3/4/5-TL
Q131 2SB1218A-QRS-TX BUFFER
REC RF EQ
RF-SWP
PB-RF
VIDEO-3.0V
BOTH-REC
VA-PB-MODE
DOP
RP-PB-MODE
V-MUTE
RP-5V
JOG+VMUTE
PB-RF-E&L
XDOC*JOG
REC-AFM-RF
REC-ATF-RF
REC-C-RF
REC-Y-RF(E/U)
VIDEO-5.0V
XFE-ON
TRV10E/12E MODEL
0.022:TRV12/12PK/22/112/212 MODEL
0.1:TRV10E/12E MODEL
0:TRV12/12PK/22/112/212 MODEL
5.6K:TRV10E/12E MODEL
39:TRV10E/12E MODEL
1.5K:TRV12/12PK/22/112/212 MODEL
1.8K:TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL
RP02 DOC_DET
RP03 MT_Q
RP04 MT_FO
RP05 MTG
RP06 REC_Y_CONT
RP07 REC_LOW_CONT
RP08 REC_C_CONT
TO (5/8)

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡	➡➡	➡
PB	⇨	⇨	⇨⇨	⇨


10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
CAP_FG
BPF_ADJ
EMPH_IN
DEEMPH_OUT
CAM_Y_IN
RF_SWP
PB_RF
VIDEO_3V
BOTH_REC
VA_PB_MODE
DOP
RP_PB_MODE
V_MUTE
RP_5V
TO (6/8) ㉓ <SEE PAGE 2-16>
TO (7/8) ㉔ (SEE PAGE 4-32)
TO (3/8) ⑱ <SEE PAGE 2-10>
TO (6/8)(7/8) ㉓ (SEE PAGE 4-32)<SEE PAGE 2-16>
TO (6/8)(7/8) ㉔ (SEE PAGE 4-32)<SEE PAGE 2-16>
TO (8/8) ㉕ (SEE PAGE 4-39)
TO (6/8) ㉓ <SEE PAGE 2-16>
TO (3/8) ⑲ <SEE PAGE 2-10>
TO (6/8) ㉓ <SEE PAGE 2-16>
TO (3/8) ⑲ <SEE PAGE 2-10>
RF-SWP
PB-RF
VIDEO-3.0V
BOTH-REC
VA-PB-MODE
JOG+VMUTE
DOP
RP-PB-MODE
V-MUTE
RP-5V
Q111 2SD1819A-QRS-TX RF AMP
Q110 2SC4400-3/4/5-TL RF AMP
Q112 2SD1819A-QRS-TX BUFFER
AFM TRAP 1.5M, 1.7M
(ATF TRAP) (C TRAP)
Q113 2SD1819A-QRS-TX BUFFER
L109 180uH
PB_5V
PB_C_RF
L113 10uH
C160 1 B
Q109 UN5213-TX SWITCH
Q108 UN5213-TX MUTE
D101 MA111-TX
0.022:TRV12/12PK/22/112/212 MODEL
0.1:TRV10E/12E MODEL
PB-RF-E&L
XDOC+JOG
REC-AFM-RF
DOC+JOG
REC_AFM_RF
TO (3/8) ⑭ <SEE PAGE 2-9>
TO (7/8) ㉔ (SEE PAGE 4-32)
Q123 UN5111-TX SWITCH
Q124 2SC4178-F14-T1 SOFT LIMITER
D102 1SS302-TE85L
Q125 2SD1819A-QRS-TX BUFFER
TRV10E/12E MODEL
D103 MA142WK-(TX)
Q120 UN5113-TX INV
Q126 UN5213
SOFT_LIM_OUT_(L)
TO (3/8) ⑲ <SEE PAGE 2-10>
JOG
FE_ON
REC_ATF
SP/LP
TO (6/8) ㉓ <SEE PAGE 2-16>
LP/SP
RP_GND
REC_C_RF
TO (3/8) ⑯ <SEE PAGE 2-9, 10>
REC-ATF-RF
REC-C-RF
TRV10E/12E MODEL
0:TRV12/12PK/22/112/212 MODEL
5.6K:TRV10E/12E MODEL
0:TRV12/12PK/22/112/212 MODEL
39:TRV10E/12E MODEL
1.5K:TRV12/12PK/22/112/212 MODEL
1.8K:TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL
IC101 CXA2002R-T4
IC101
REC/PB AMP
TRV10E/12E MODEL
Q114 UN5213
TRV10E/12E MODEL
RP02
RP05
RP06
RP07
RP08
㉘
㉙
㉚
㉛
(REC)
VIDEO-5.0V
REC-Y-RF(E/U)
Q129 2SB1218A-QRS-TX
Q130 2SC4400-3/4/5-TL
Q131 2SB1218A-QRS-TX BUFFER
— REC RF EQ —
VIDEO_5V
TO (3/8) ⑰ <SEE PAGE 2-10>
REC_Y_RF
TO (3/8) ⑮ <SEE PAGE 2-9>
XFE-ON
FE BLOCK
Q104 2SC4116-YG SW
Q107 2SA1838-TL
Q106 2SA1576T106R ERASE AMP
RP02 DOC_DET
RP03 MT_Q
RP04 MT_FO
RP05 MTG
RP06 REC_Y_CONT
RP07 REC_LOW_CONT
RP08 REC_C_CONT
TO (5/8) ㉒ (SEE PAGE 4-25)

VC-167 BOARD

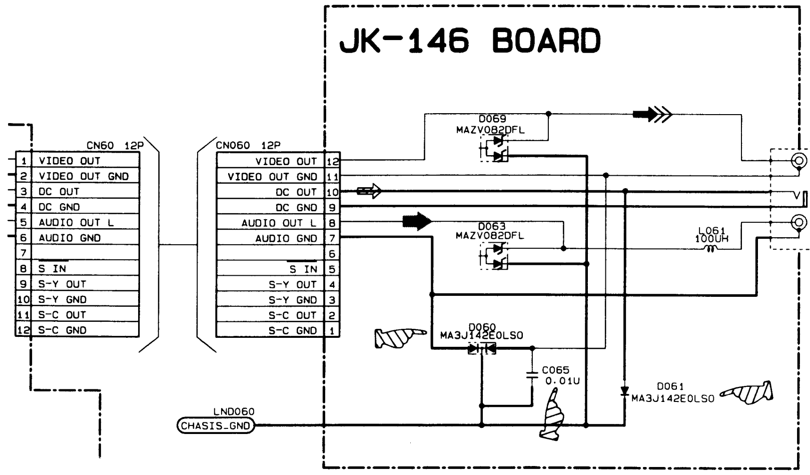

㉘ IC101 ⑩ PB
0.1μsec/div
0.3Vp-p
㉝ CN102 ② REC
0.1μsec/div
0.2Vp-p
㉙ IC101 ⑭ PB
0.1μsec/div
0.4Vp-p
㉞ CN102 ④,⑤ REC
H
480mVp-p
㉚ IC101 ④ REC
H
0.2Vp-p
㉟ CN102 ⑧ REC/PB
30Hz (NTSC)
25Hz (PAL)
2.7Vp-p
㉛ IC101 ⑥ REC
0.1μsec/div
450mVp-p
㊱ CN102 ⑨ REC/PB
822Hz (NTSC)
1148Hz (PAL)
3Vp-p
㉜ IC101 ㉗,㉞ REC
0.1μsec/div
4.8Vp-p

JK-146 (JACK) SCHEMATIC DIAGRAM

– Ref. No. JK-146 Board; 2,000 Series –

- **See page original service manual 4-26 for JK-146 BOARD printed wiring board.**

(PAGE4-25 LOCATION A-E, 17-23)


JK-146 BOARD
CN60 12P
1 VIDEO OUT
2 VIDEO OUT GND
3 DC OUT
4 DC GND
5 AUDIO OUT L
6 AUDIO GND
7
8 S IN
9 S-Y OUT
10 S-Y GND
11 S-C OUT
12 S-C GND
CN060 12P
VIDEO OUT 12
VIDEO OUT GND 11
DC OUT 10
DC GND 9
AUDIO OUT L 8
AUDIO GND 7
6
S IN 5
S-Y OUT 4
S-Y GND 3
S-C OUT 2
S-C GND 1
D059 MAZV082DFL
D063 MAZV082DFL
L061 100UH
J050
VIDEO OUT
RFU DC OUT
AUDIO OUT
D060 MA3J142E0LSO
C065 0.01U
D061 MA3J142E0LSO
LND060 CHASIS_GND

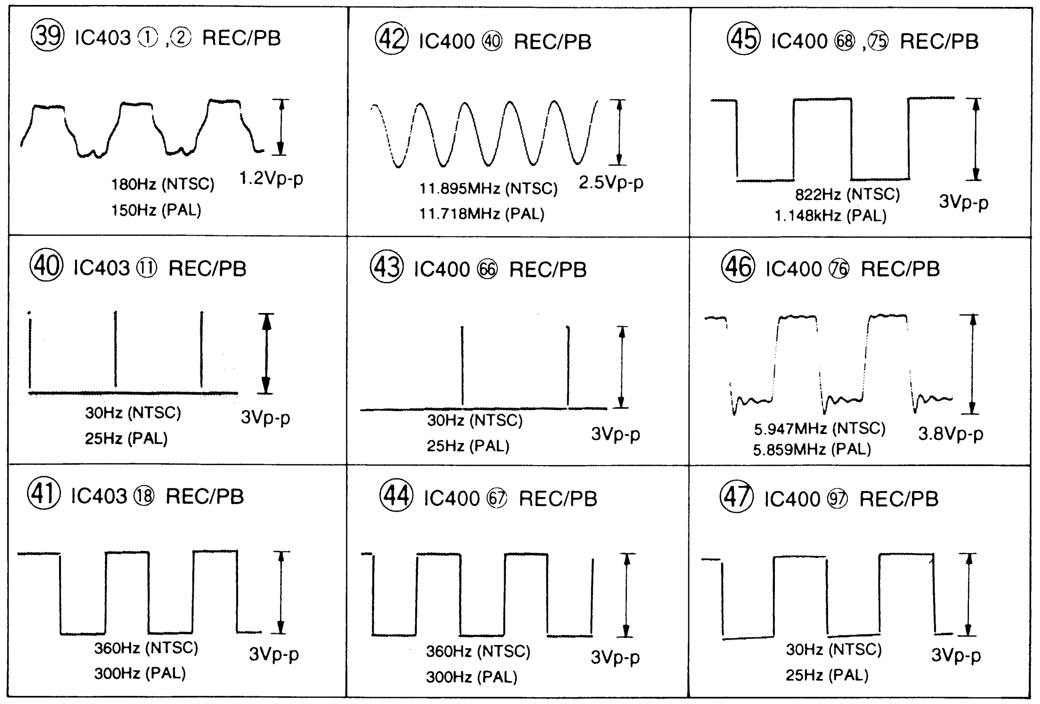
▨:Points changed parts.

C065 1-162-970-11 CERAMIC CHIP 0.01μF 10% 25 V

- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC			⇛	➡
PB				⇨

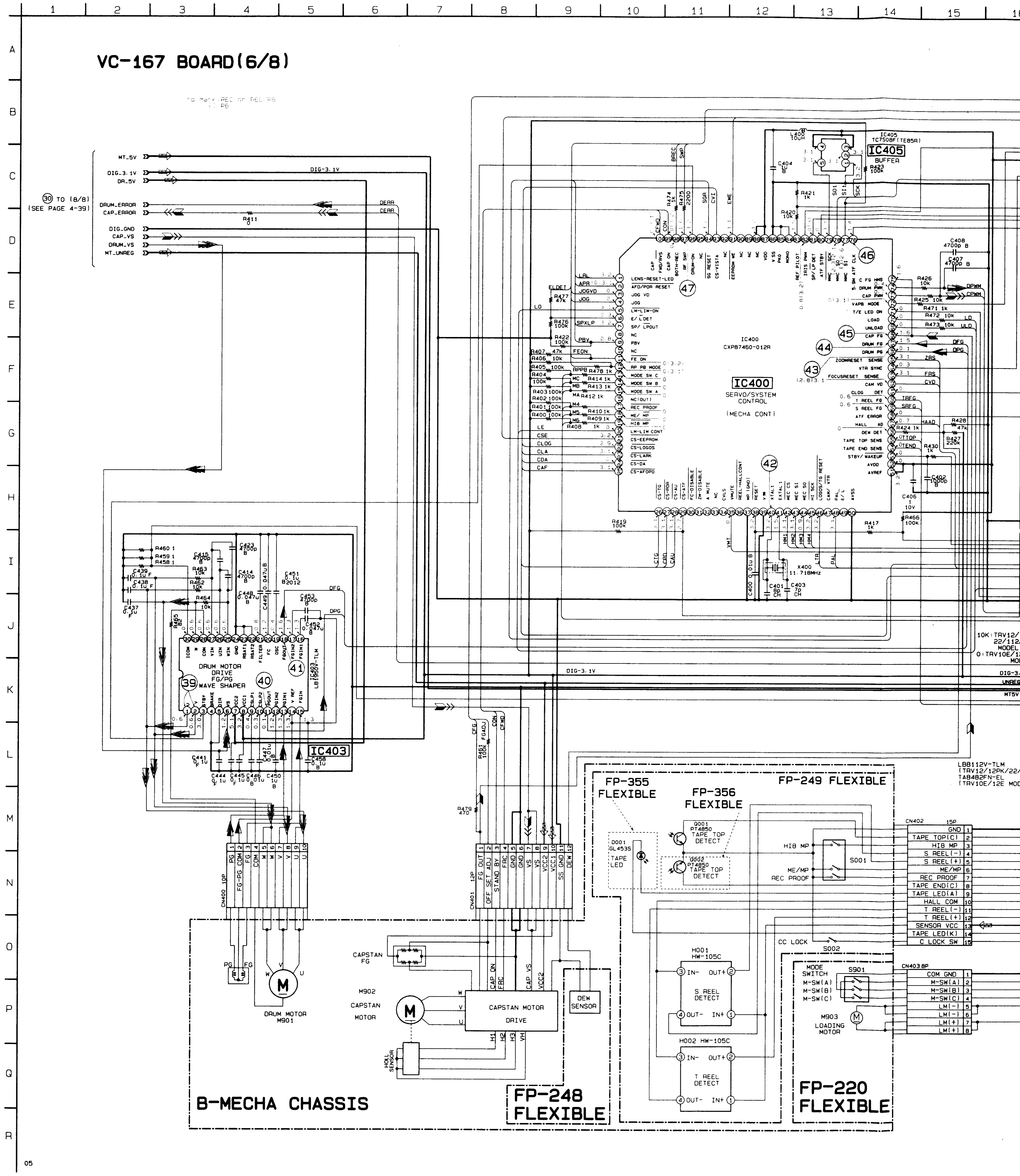
VC-167 BOARD



VC-167 (MODE CONTROL), FP-249 (MODE SENSOR) SCHEMATIC DIAGRAMS

– Ref. No. VC-167 Board; 1,000 Series, FP-249 Board; 5,000 Series –

- **See page original service manual 4-7 for VC-167 BOARD printed wiring board.**
- **See page original service manual 4-29 for FP-249 BOARD printed wiring board.**


VC-167 BOARD(6/8)
MT_5V
DIG_3.1V
DR_5V
DRUM_ERROR
CAP_ERROR
DIG_GND
CAP_VS
DRUM_VS
MT_UNREG
㊴ TO (8/8) (SEE PAGE 4-39)
IC405 TC7S08F(TE85R)
IC405 BUFFER
IC400 CXP87460-012R
IC400 SERVO/SYSTEM CONTROL (MECHA CONT)
X400 11.718MHz
IC403 LB8112V-TLM
DRUM MOTOR DRIVE FG/PG WAVE SHAPER
10K:TRV12/22/112 MODEL
0:TRV10E/12E MODEL
LB8112V-TLM (TRV12/12PK/22/112)
TA8482FN-EL (TRV10E/12E MODEL)
FP-355 FLEXIBLE
FP-356 FLEXIBLE
FP-249 FLEXIBLE
D001 GL453S TAPE LED
Q001 PT4850 TAPE TOP DETECT
Q002 PT4850 TAPE TOP DETECT
S001
S002
CC LOCK
CN402 15P
GND
TAPE TOP(C)
HI8 MP
S REEL(-)
S REEL(+)
ME/MP
REC PROOF
TAPE END(C)
TAPE LED(A)
HALL COM
T REEL(-)
T REEL(+)
SENSOR VCC
TAPE LED(K)
C LOCK SW
H001 HW-105C
S REEL DETECT
H002 HW-105C
T REEL DETECT
MODE SWITCH S901
M-SW(A)
M-SW(B)
M-SW(C)
M903 LOADING MOTOR
CN403 8P
COM GND
LM(-)
LM(+)
CN400 10P
CN401 12P
CAPSTAN FG
DRUM MOTOR M901
M902 CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE
DEW SENSOR
HALL SENSOR
B-MECHA CHASSIS
FP-248 FLEXIBLE
FP-220 FLEXIBLE

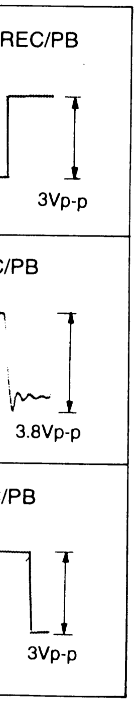
VC-167 (MODE CONTROL), FP-249 (MODE SENSOR) SCHEMATIC DIAGRAMS

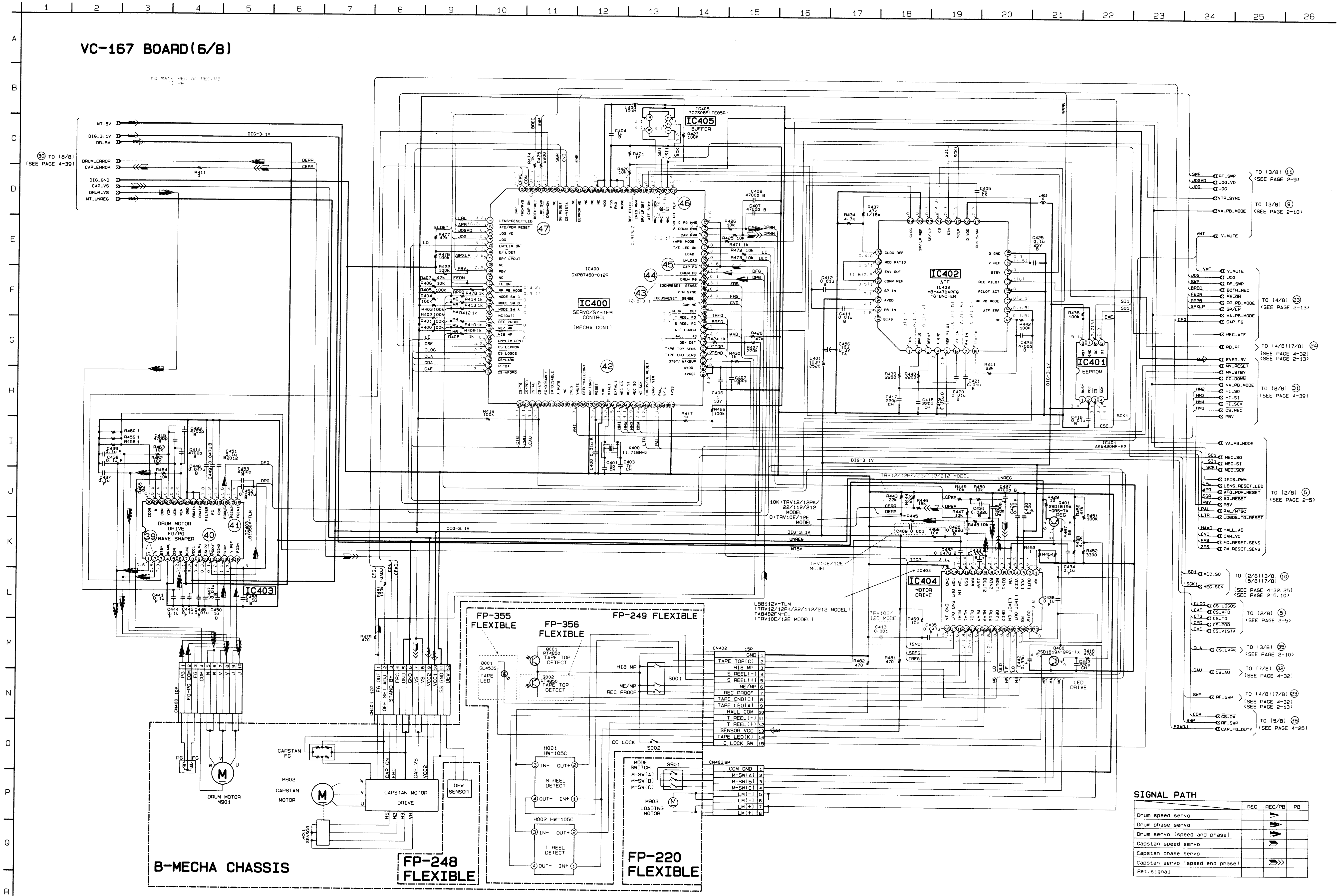
– Ref. No. VC-167 Board; 1,000 Series, FP-249 Board; 5,000 Series –

- **See page original service manual 4-7 for VC-167 BOARD printed wiring board.**
- **See page original service manual 4-29 for FP-249 BOARD printed wiring board.**

1µF 10% 25 V

	AUDIO SIGNAL
MA	
➡	➡
	⇨




VC-167 BOARD(6/8)
IC400
CXP87460-012R
IC400
SERVO/SYSTEM CONTROL
(MECHA CONT)
IC402
ATF
IC402
MB-4470APFQ-G-BND-ER
IC405
TC7S08F(TE85R)
IC405
BUFFER
IC401
EEPROM
IC401
AK6420HF-E2
IC403
DRUM MOTOR DRIVE
FG/PG WAVE SHAPER
IC404
MOTOR DRIVE
LB8112V-TLM
(TAV12/12PK/22/112/212 MODEL)
TA8482FN-EL
(TAV10E/12E MODEL)
X400
11.718MHz
MT_5V
DIG_3.1V
DR_5V
DRUM_ERROR
CAP_ERROR
DIG_GND
CAP_VS
DRUM_VS
MT_UNREG
㉚ TO (8/8)
(SEE PAGE 4-39)
TO (3/8) ⑪
(SEE PAGE 2-9)
TO (3/8) ⑨
(SEE PAGE 2-10)
TO (4/8) ㉓
(SEE PAGE 2-13)
TO (4/8)(7/8) ㉔
(SEE PAGE 4-32)
(SEE PAGE 2-13)
TO (8/8) ㉛
(SEE PAGE 4-39)
TO (2/8) ⑤
(SEE PAGE 2-5)
TO (2/8)(3/8) ⑩
(5/8)(7/8)
(SEE PAGE 4-32.25)
(SEE PAGE 2-5.10)
TO (2/8) ⑤
(SEE PAGE 2-5)
TO (3/8) ㉟
(SEE PAGE 2-10)
TO (7/8) ㉜
(SEE PAGE 4-32)
TO (4/8)(7/8) ㉓
(SEE PAGE 4-32)
(SEE PAGE 2-13)
TO (5/8) ㊱
(SEE PAGE 4-25)
10K:TAV12/12PK/22/112/212 MODEL
0:TAV10E/12E MODEL
TAV10E/12E MODEL
FP-355 FLEXIBLE
FP-356 FLEXIBLE
FP-249 FLEXIBLE
D001 GL453S
TAPE LED
Q001 PT4850
TAPE TOP DETECT
Q002 PT4850
TAPE TOP DETECT
HI8 MP
ME/MP
REC PROOF
S001
CC LOCK
S002
H001 HW-105C
S REEL DETECT
H002 HW-105C
T REEL DETECT
MODE SWITCH
S901
M-SW(A)
M-SW(B)
M-SW(C)
M903
LOADING MOTOR
CN402 15P
GND
TAPE TOP(C)
HI8 MP
S REEL(-)
S REEL(+)
ME/MP
REC PROOF
TAPE END(C)
TAPE LED(A)
HALL COM
T REEL(-)
T REEL(+)
SENSOR VCC
TAPE LED(K)
C LOCK SW
CN403 8P
COM GND
M-SW(A)
M-SW(B)
M-SW(C)
LM(-)
LM(-)
LM(+)
LM(+)
CN400 10P
CN401 12P
DRUM MOTOR
M901
CAPSTAN FG
M902
CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE
DEW SENSOR
HOLL SENSOR
B-MECHA CHASSIS
FP-248 FLEXIBLE
FP-220 FLEXIBLE
LED DRIVE
2SD1819A-QRS-TX
REG

SIGNAL PATH

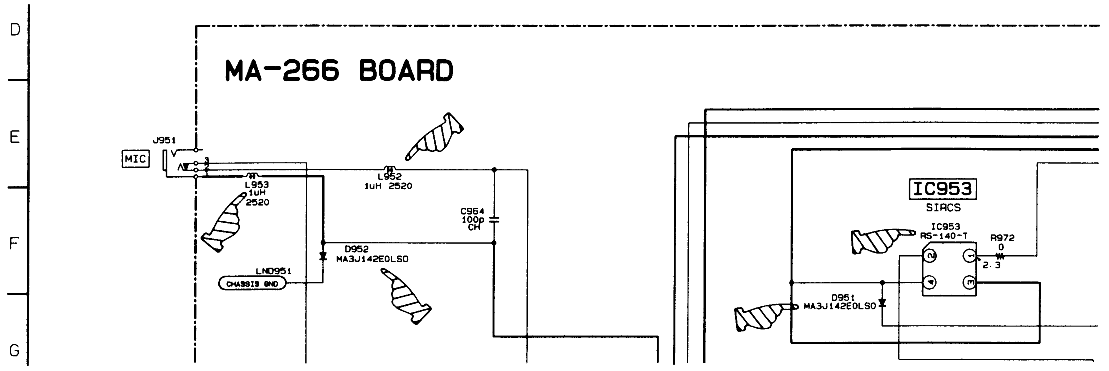
	REC	REC/PB	PB
Drum speed servo		▷	
Drum phase servo		➡	
Drum servo (speed and phase)		➡	
Capstan speed servo		➡	
Capstan phase servo			
Capstan servo (speed and phase)		➡››	
Ret.signal			

VC-167 (AUDIO AMP), MA-266 (AUDIO) SCHEMATIC DIAGRAMS

– Ref. No. VC-167 Board; 1,000 Series, MA-266 Board; 2,000 Series –

- **See page original service manual 4-7 for VC-167 BOARD printed wiring board.**
- **See page original service manual 4-33 for MA-266 BOARD printed wiring board.**

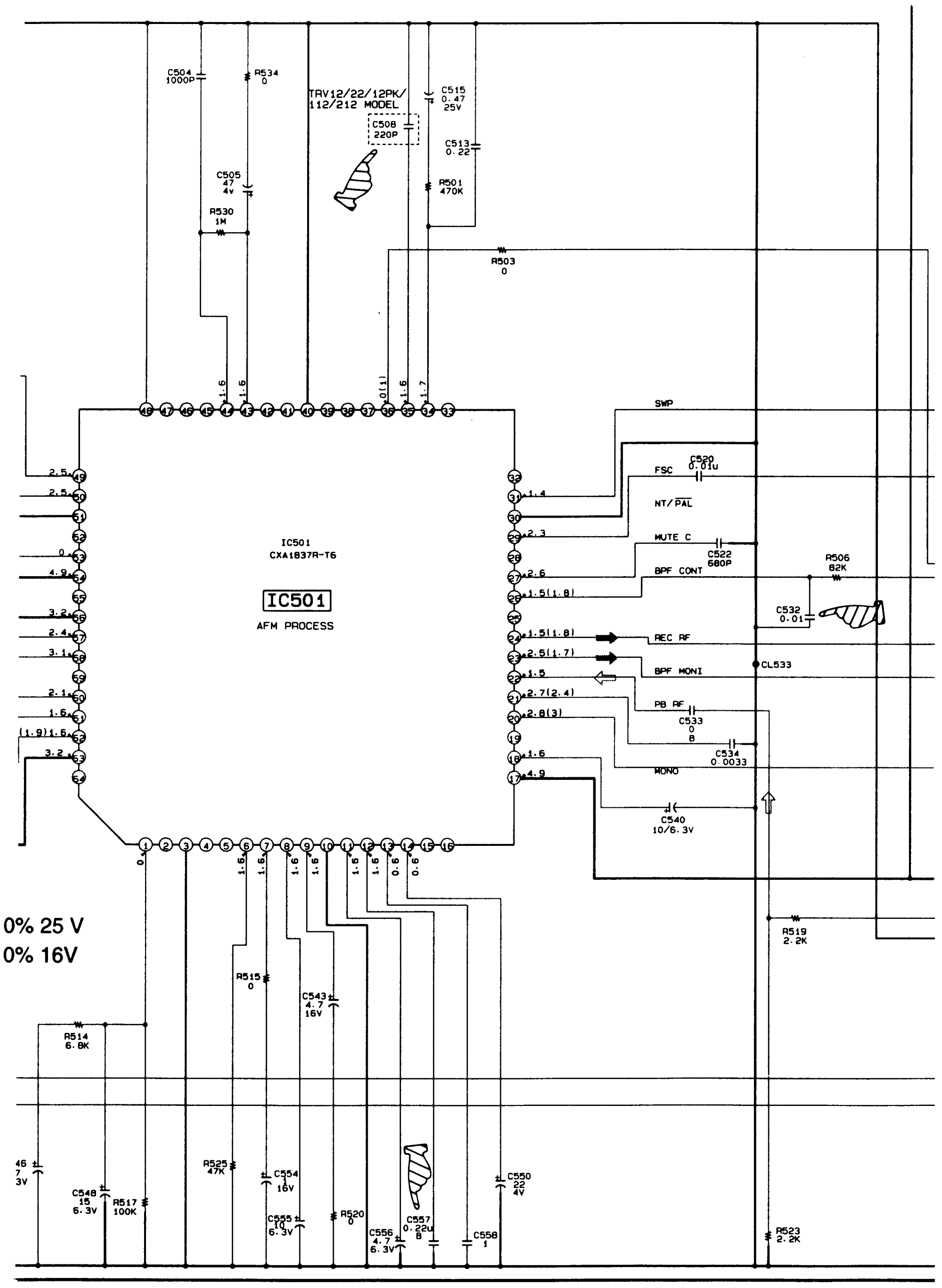
(PAGE 4-30 LOCATION D-G, 1-10)


MA-266 BOARD
MIC
J951
L953 1uH 2520
L952 1uH 2520
LND951 CHASSIS GND
D952 MA3J142EOLSO
C964 100p CH
IC953 SIRCS
IC953 RS-140-T
R972 0
D951 MA3J142EOLSO
D
E
F
G

IC953 8-749-012-17 IC RS-140-T

VC-167 BOARD (7/8)

(PAGE 4-31, 32
LOCATION C-N, 2-29)


IC501
CXA1837R-T6
IC501
AFM PROCESS
TRV12/22/12PK/112/212 MODEL
C508 220P
C515 0.47 25V
C513 0.22
R501 470K
C504 1000P
R534 0
C505 47 4V
R530 1M
R503 0
SWP
FSC
C520 0.01u
NT/PAL
MUTE C
BPF CONT
C522 680P
R506 82K
C532 0.01
REC RF
BPF MONI
CL533
PB RF
C533 0 B
C534 0.0033
MONO
C540 10/6.3V
R519 2.2K
R515 0
C543 4.7 16V
R514 6.8K
C548 15 6.3V
R517 100K
R525 47K
C554 16V
C555 10 6.3V
R520 0
C556 4.7 6.3V
C557 0.22u B
C558 1
C550 22 4V
R523 2.2K

:Points changed parts.

C532 1-162-970-11 CERAMIC CHIP 0.01μF 10% 25 V
C557 1-164-489-11 CERAMIC CHIP 0.22μF 10% 16V

- Signal path

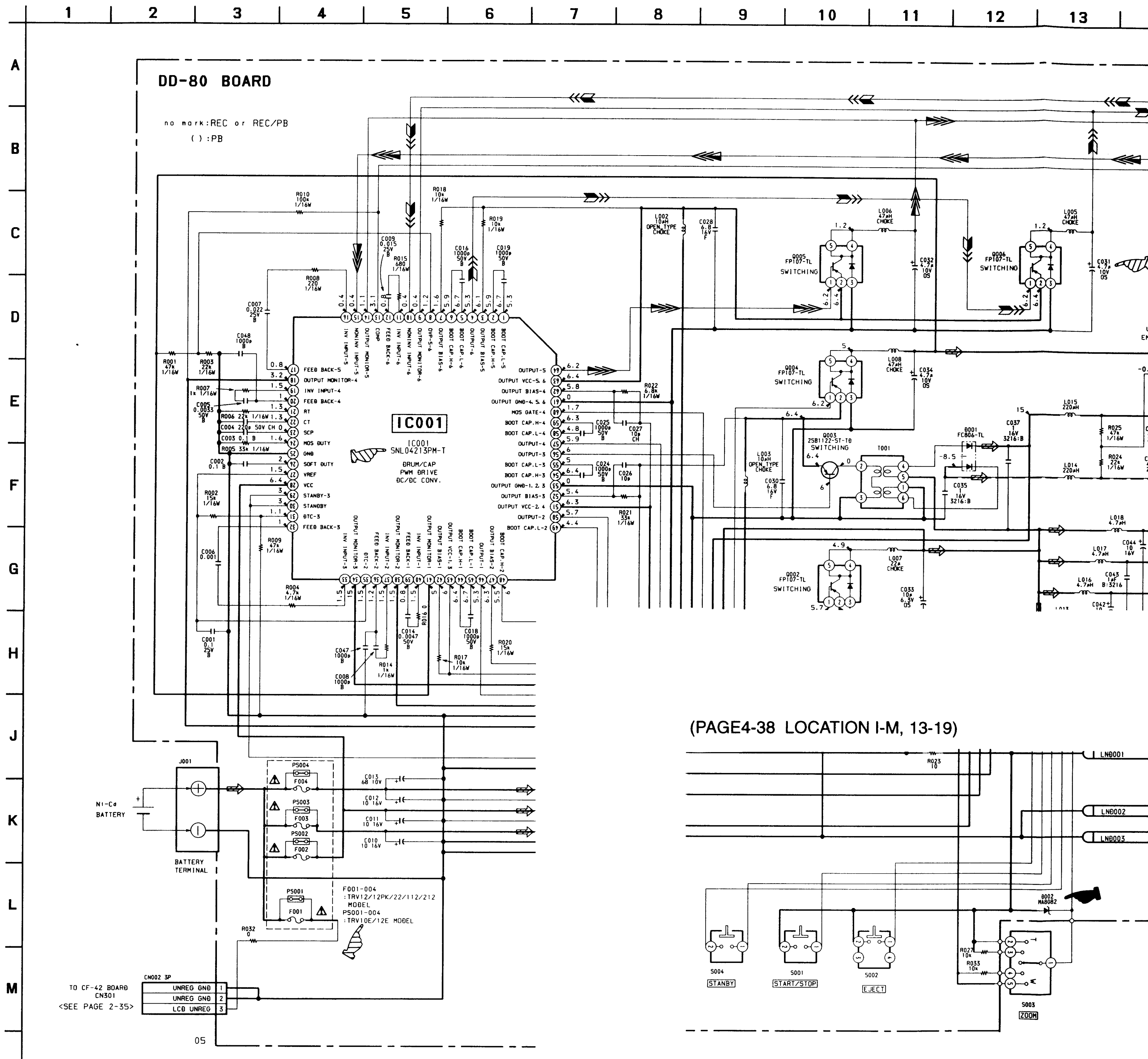
	AUDIO SIGNAL
REC	➡
PB	⇨

DD-80 (POWER) SCHEMATIC DIAGRAM

– Ref. No. DD-80 Board; 1,000 Series –

- **See page original service manual 4-35 for DD-80 BOARD printed wiring board.**

(PAGE 4-37)


DD-80 BOARD
no mark:REC or REC/PB
( ):PB
IC001
IC001
SNL0421 3PM-T
DRUM/CAP
PWM DRIVE
DC/DC CONV.
Q005 FP107-TL SWITCHING
Q006 FP107-TL SWITCHING
Q004 FP107-TL SWITCHING
Q003 2SB1122-ST-TB SWITCHING
Q002 FP107-TL SWITCHING
T001
L002 OPEN TYPE CHOKE
L003 OPEN TYPE CHOKE
J001
Ni-Cd BATTERY
BATTERY TERMINAL
F001-004 :TRV12/12PK/22/112/212 MODEL
PS001-004 :TRV10E/12E MODEL
CN002 3P
UNREG GND
UNREG GND
LCD UNREG
TO CF-42 BOARD CN301 <SEE PAGE 2-35>
05
LN0001
LN0002
LN0003
S004 STANBY
S001 START/STOP
S002 EJECT
S003 ZOOM
A
B
C
D
E
F
G
H
J
K
L
M
N
O
P
1
2
3
4
5
6
7
8
9
10
11
12
13

(PAGE4-38 LOCATION I-M, 13-19)

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		▶≫	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		➤»	
Ref. signal			

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une piéce portant le numéro spécifié.

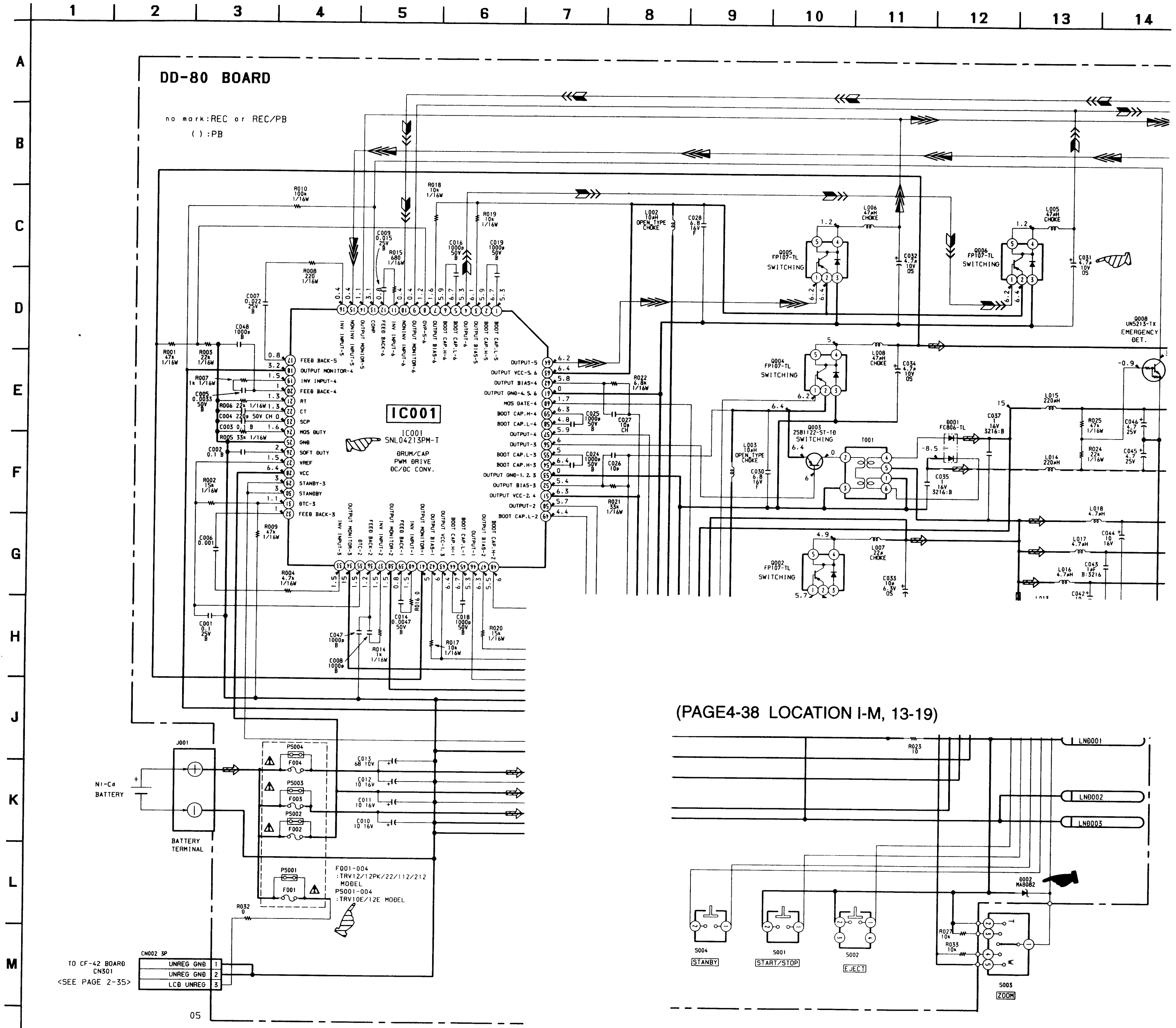
:Points deleted parts.
:Points changed parts.

DD-80 (POWER) SCHEMATIC DIAGRAM

– Ref. No. DD-80 Board; 1,000 Series –

- **See page original service manual 4-35 for DD-80 BOARD printed wiring board.**

(PAGE 4-37)


DD-80 BOARD
no mark:REC or REC/PB
( ):PB
IC001
IC001 SNL0421SPM-T DRUM/CAP PWM DRIVE DC/DC CONV.
Ni-Cd BATTERY
BATTERY TERMINAL
TO CF-42 BOARD CN501 <SEE PAGE 2-35>
CN002 5P
UNREG GND
UNREG GND
LCD UNREG
F001-004 :TRV12/12PK/22/112/212 MODEL
P5001-004 :TRV10E/12E MODEL
(PAGE4-38 LOCATION I-M, 13-19)
S004 STANBY
S001 START/STOP
S002 EJECT
S003 ZOOM
05

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		⇛	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		⋙	
Ref.signal			

Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une piéce portant le numéro spécifié.

:Points deleted parts.

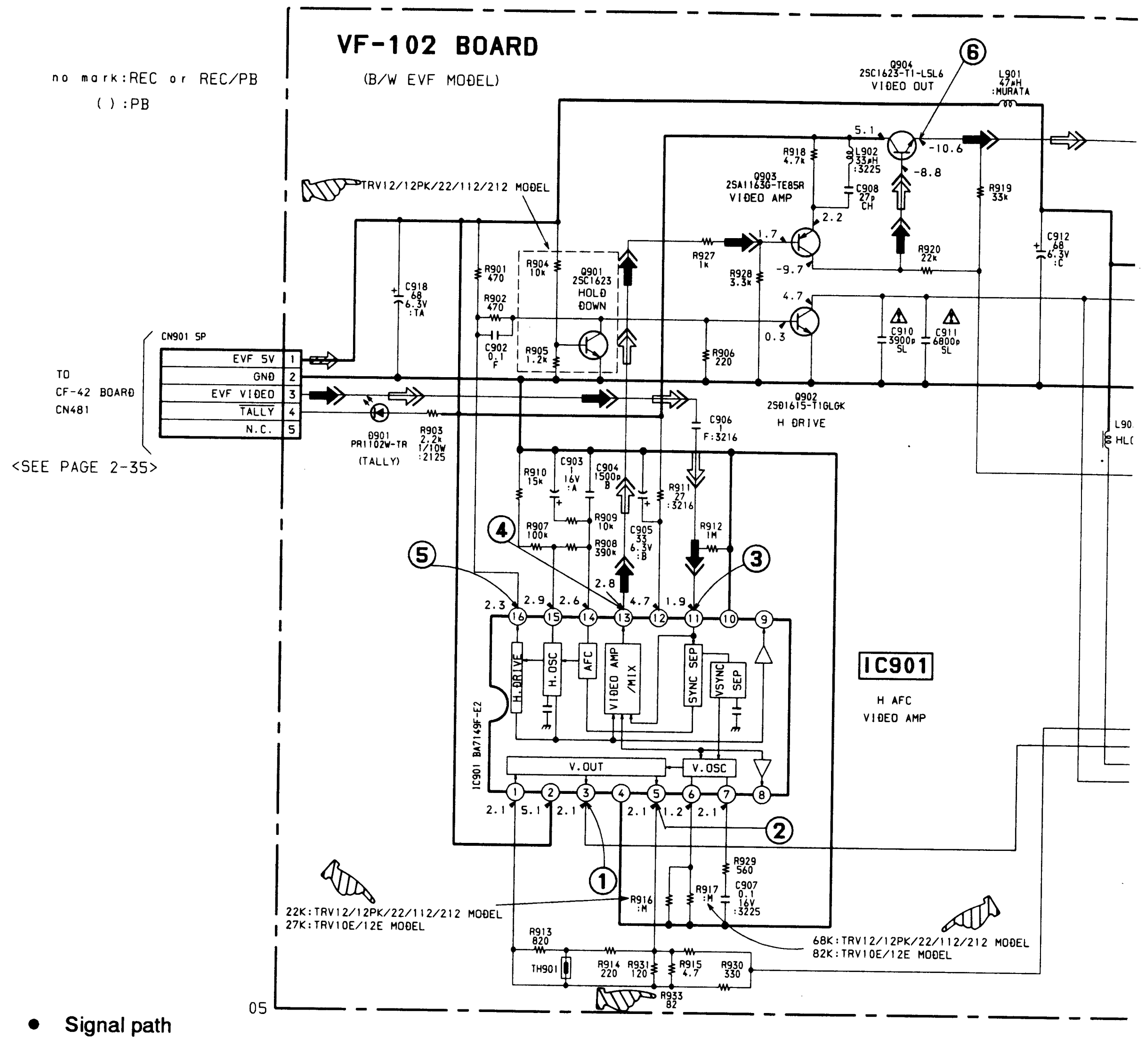
:Points changed parts.

VF-102 (EVF) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

–Ref. No.: VF-102 Board; 6,000 Series–

- **See page original service manual 4-49 for VF-102 BOARD printed wiring board.**

(PAGE 4-47)


VF-102 BOARD
(B/W EVF MODEL)
no mark:REC or REC/PB
( ):PB
TRV12/12PK/22/112/212 MODEL
TO CF-42 BOARD CN481
<SEE PAGE 2-35>
CN901 5P
EVF 5V
GND
EVF VIDEO
TALLY
N.C.
Q904 2SC1623-T1-L5L6 VIDEO OUT
Q903 2SA1163G-TE85R VIDEO AMP
Q901 2SC1623 HOLD DOWN
Q902 2SD1615-T1GLGK H DRIVE
D901 PR1102W-TR (TALLY)
IC901
IC901 BA7149F-E2
H AFC VIDEO AMP
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
V.SYNC SEP
V.OUT
V.OSC
22K:TRV12/12PK/22/112/212 MODEL
27K:TRV10E/12E MODEL
68K:TRV12/12PK/22/112/212 MODEL
82K:TRV10E/12E MODEL
05

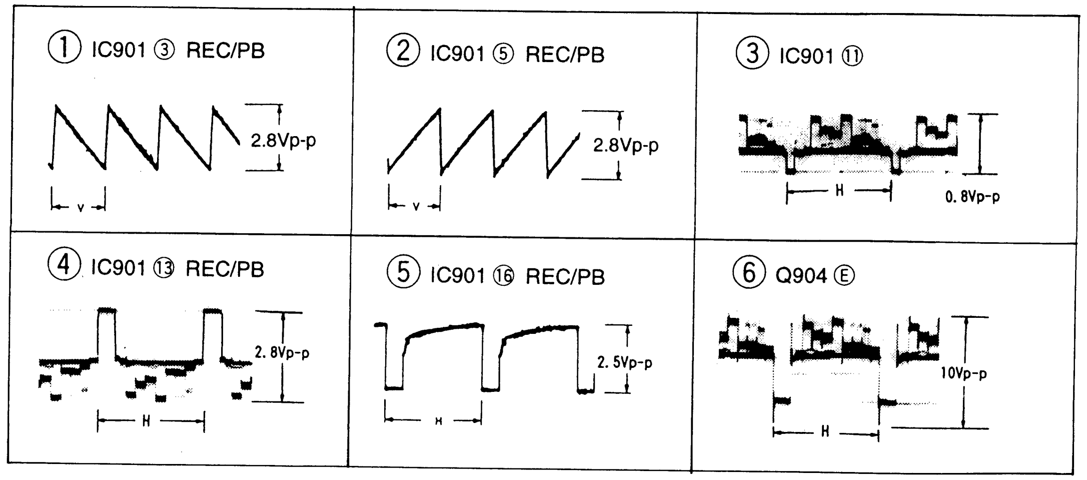
- Signal path

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC		➡»		
PB		⇨»		

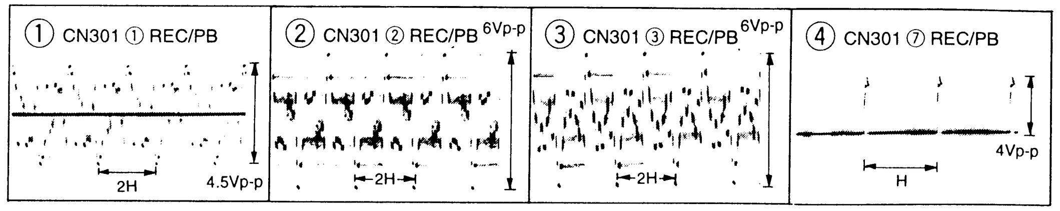
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une piéce portant le numéro spécifié.

: Points changed parts.

VF-102 BOARD



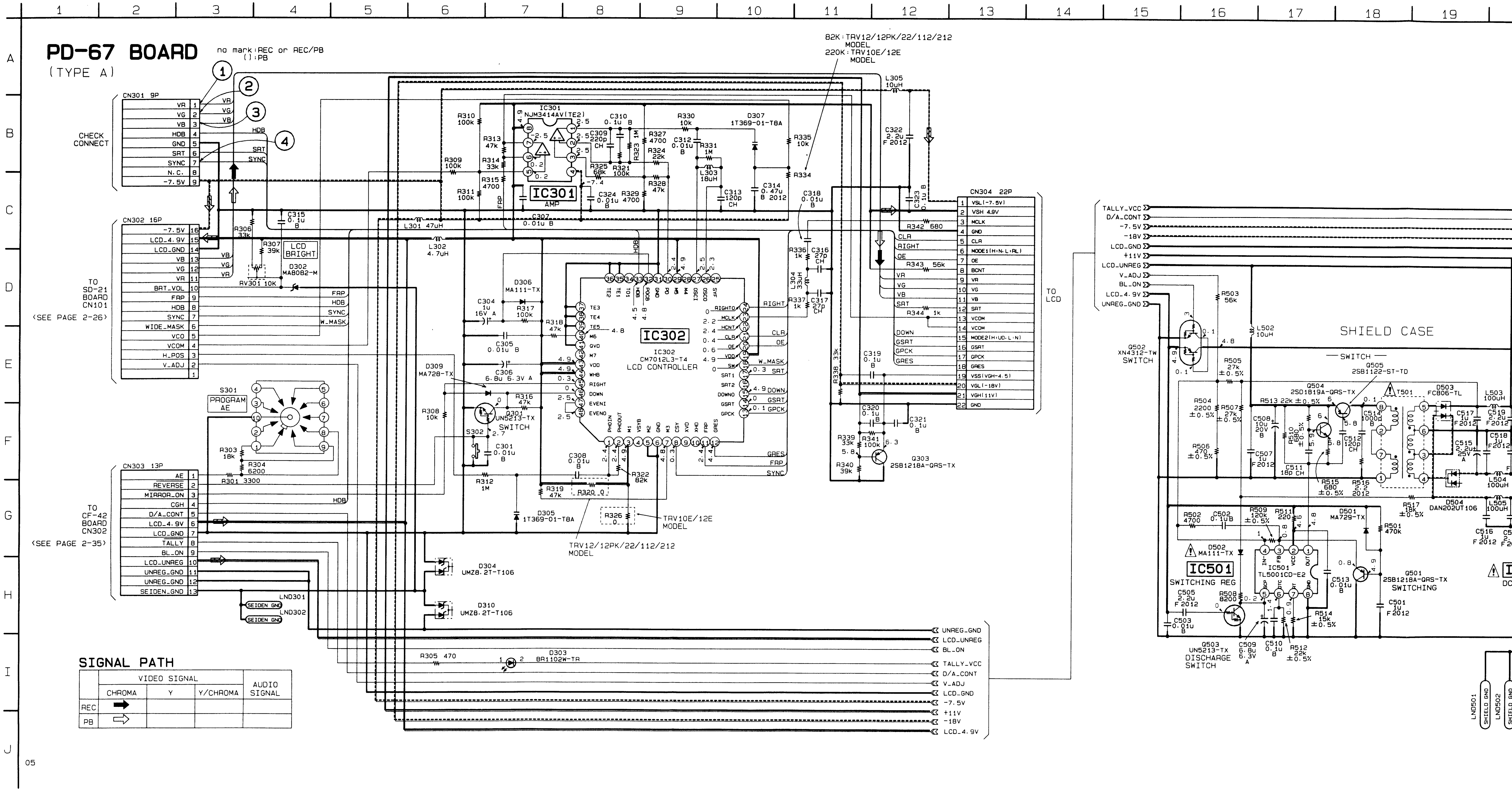
PD-67 BOARD



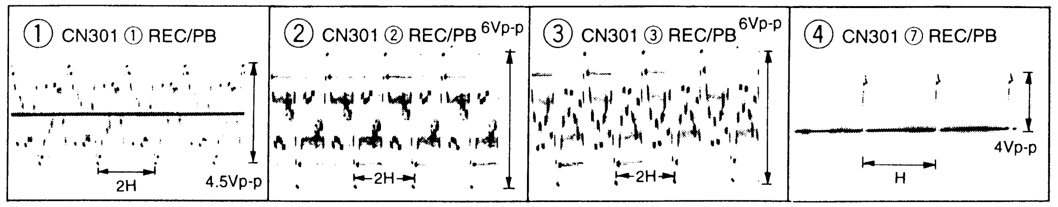
PD-67 (LCD) SCHEMATIC DIAGRAM (TYPE A)

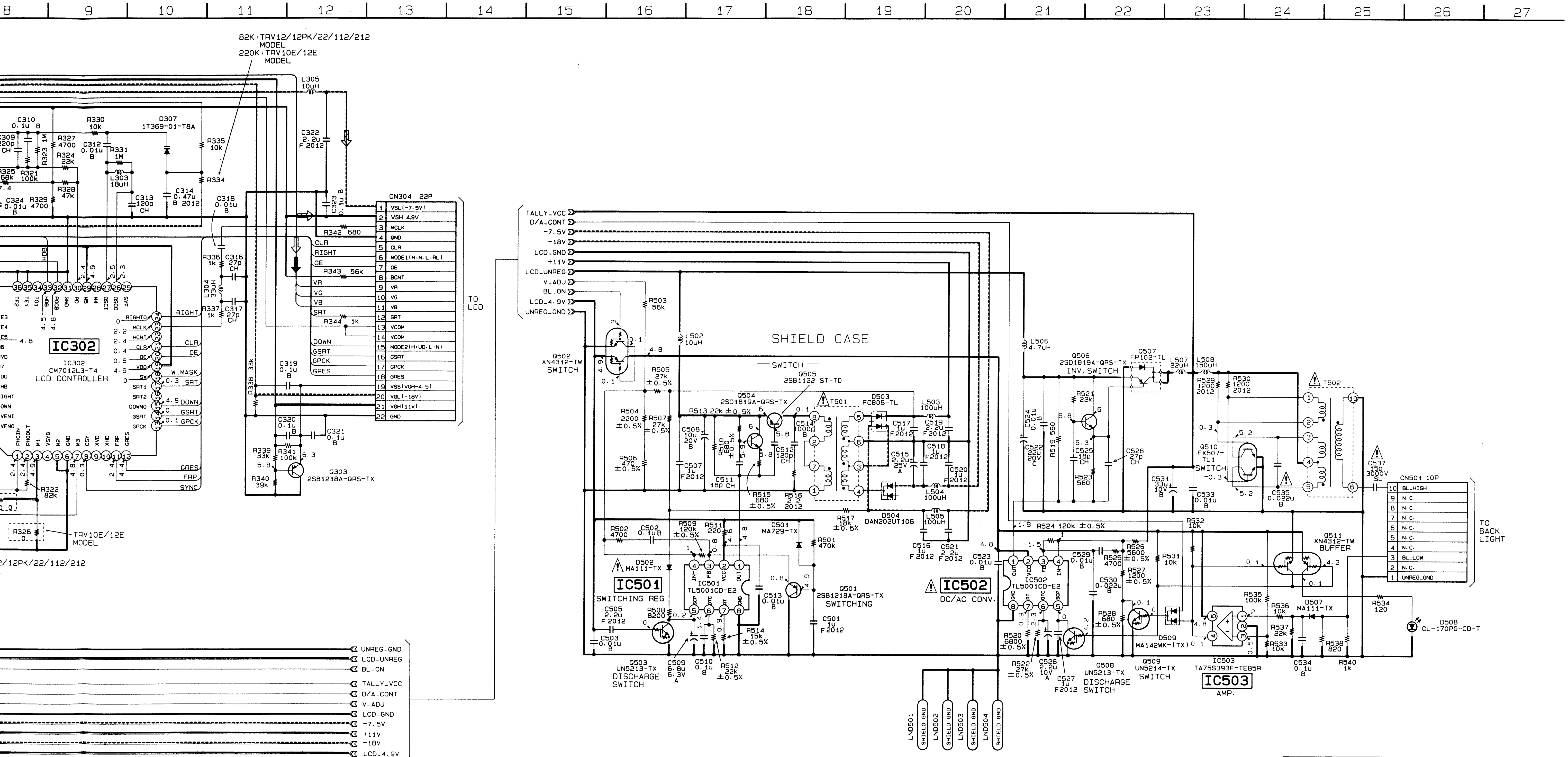
–Ref. No.: PD-67 Board; 8,000 Series–

- **See page original service manual 4-59 for PD-67 BOARD printed wiring board.**


PD-67 BOARD
(TYPE A)
no mark: REC or REC/PB
( ): PB
CHECK CONNECT
CN301 9P
VR
VG
VB
HDB
GND
SRT
SYNC
N.C.
-7.5V
CN302 16P
TO SD-21 BOARD CN101
(SEE PAGE 2-26)
CN303 13P
TO CF-42 BOARD CN302
(SEE PAGE 2-35)
IC301
NJM3414AV(TE2)
AMP
IC302
CM7012L3-T4
LCD CONTROLLER
LCD BRIGHT
RV301 10K
S301 PROGRAM AE
D302 MA8082-M
D306 MA111-TX
D309 MA728-TX
Q301 UN5213-TX SWITCH
S302
D305 1T369-01-T8A
D307 1T369-01-T8A
D304 UMZ8.2T-T106
D310 UMZ8.2T-T106
D303 BR1102W-TR
Q303 2SB1218A-QRS-TX
TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL
82K: TRV12/12PK/22/112/212 MODEL
220K: TRV10E/12E MODEL
CN304 22P
TO LCD
LND301
LND302
SEIDEN GND
SHIELD CASE
Q502 XN4312-TW SWITCH
Q504 2SD1819A-QRS-TX
Q505 2SB1122-ST-TD
T501
D503 FC806-TL
D504 DAN202UT106
D501 MA729-TX
D502 MA111-TX
IC501 TL5001CD-E2
SWITCHING REG
Q501 2SB1218A-QRS-TX SWITCHING
Q503 UN5213-TX DISCHARGE SWITCH
LND501
LND502
SHIELD GND
05
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB

PD-67 BOARD




8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
82K : TRV12/12PK/22/112/212 MODEL
220K : TRV10E/12E MODEL
L305 10uH
C310 0.1u B
R330 10k
D307 1T369-01-T8A
R327 4700
C312 0.01u B
R331 1M
R335 10k
R334
C322 2.2u F 2012
R324 22k
R321 100k
L303 18uH
R328 47k
C313 120p CH
C314 0.47u B 2012
C318 0.01u B
C323 0.1u B
C324 0.01u B
R329 4700
IC302
IC302 CM7012L3-T4 LCD CONTROLLER
R336 1k
C316 27p CH
L304 33uH
R337 1k
C317 27p CH
R342 680
R343 56k
R344 1k
R338 33k
C319 0.1u B
C320 0.1u B
C321 0.1u B
R339 33k
R341 100k
R340 39k
Q303 2SB1218A-QRS-TX
R322 82k
R326
TRV10E/12E MODEL
/12PK/22/112/212
CN304 22P
1 VSL(-7.5V)
2 VSH 4.9V
3 MCLK
4 GND
5 CLR
6 MODE1(H:N・L:RL)
7 OE
8 BCNT
9 VR
10 VG
11 VB
12 SRT
13 VCOM
14 VCOM
15 MODE2(H:UD・L:N)
16 GSRT
17 GPCK
18 GRES
19 VSS(VGH-4.5)
20 VGL(-18V)
21 VGH(11V)
22 GND
TO LCD
RIGHT
CLR
OE
W_MASK
SRT
DOWN
GSRT
GPCK
GRES
FRP
SYNC
UNREG_GND
LCD_UNREG
BL_ON
TALLY_VCC
D/A_CONT
V_ADJ
LCD_GND
-7.5V
+11V
-18V
LCD_4.9V
TALLY_VCC
D/A_CONT
-7.5V
-18V
LCD_GND
+11V
LCD_UNREG
V_ADJ
BL_ON
LCD_4.9V
UNREG_GND
R503 56k
L502 10uH
SHIELD CASE
Q502 XN4312-TW SWITCH
R505 27k ±0.5%
— SWITCH —
Q505 2SB1122-ST-TD
Q504 2SD1819A-QRS-TX
T501
D503 FC806-TL
L503 100uH
R504 2200 ±0.5%
R507 27k ±0.5%
R513 22k ±0.5%
C508 10u 20V B
R510 680 ±0.5%
C514 1000p B
C517 1u F2012
C519 2.2u F2012
C518 1u F2012
C512 120p CH
C515 2.2u 25V A
C520 1u F2012
R506 470 ±0.5%
C507 1u F2012
C511 18p CH
R515 680 ±0.5%
R516 2.2 2012
L504 100uH
R517 18k ±0.5%
D504 DAN202UT106
L505 100uH
R502 4700
C502 0.1u B
R509 120k ±0.5%
R511 220
D501 MA729-TX
R501 470k
C516 1u F2012
C521 2.2u F2012
D502 MA111-TX
IC501
SWITCHING REG
IC501 TL5001CD-E2
C513 0.01u B
Q501 2SB1218A-QRS-TX SWITCHING
C505 2.2u F2012
R508 8200
C501 1u F2012
C503 0.01u B
R514 15k ±0.5%
Q503 UN5213-TX DISCHARGE SWITCH
C509 6.8u 6.3V A
C510 0.1u B
R512 22k ±0.5%
L506 4.7uH
Q506 2SD1819A-QRS-TX INV. SWITCH
Q507 FP102-TL
L507 22uH
L508 150uH
R521 22k
R529 1200 2012
R530 1200 2012
T502
C524 0.01u B
R519 560
C522 22u 20V
C525 18p CH
C528 27p CH
R523 560
Q510 FX507-TL1 SWITCH
C531 33u 10V B
C533 0.01u B
C535 0.022u B
C537 15p 3000V SL
CN501 10P
10 BL_HIGH
9 N.C.
8 N.C.
7 N.C.
6 N.C.
5 N.C.
4 N.C.
3 BL_LOW
2 N.C.
1 UNREG_GND
TO BACK LIGHT
R524 120k ±0.5%
R532 10k
C523 0.01u B
C529 0.01u B
R526 5600 ±0.5%
R525 4700
R531 10k
Q511 XN4312-TW BUFFER
IC502
DC/AC CONV.
IC502 TL5001CD-E2
C530 0.022u B
R527 1200 ±0.5%
R535 100k
R536 10k
D507 MA111-TX
R534 120
D508 CL-170PG-CD-T
R528 680 ±0.5%
R520 6800 ±0.5%
R537 22k
R533 10k
R538 820
D509 MA142WK-(TX)
R522 27k ±0.5%
C526 2.2u 10V A
C527 1u F2012
Q508 UN5213-TX DISCHARGE SWITCH
Q509 UN5214-TX SWITCH
IC503 TA75S393F-TE85R
IC503
AMP.
C534 0.1u B
R540 1k
LND501
LND502
LND503
LND504
SHIELD GND

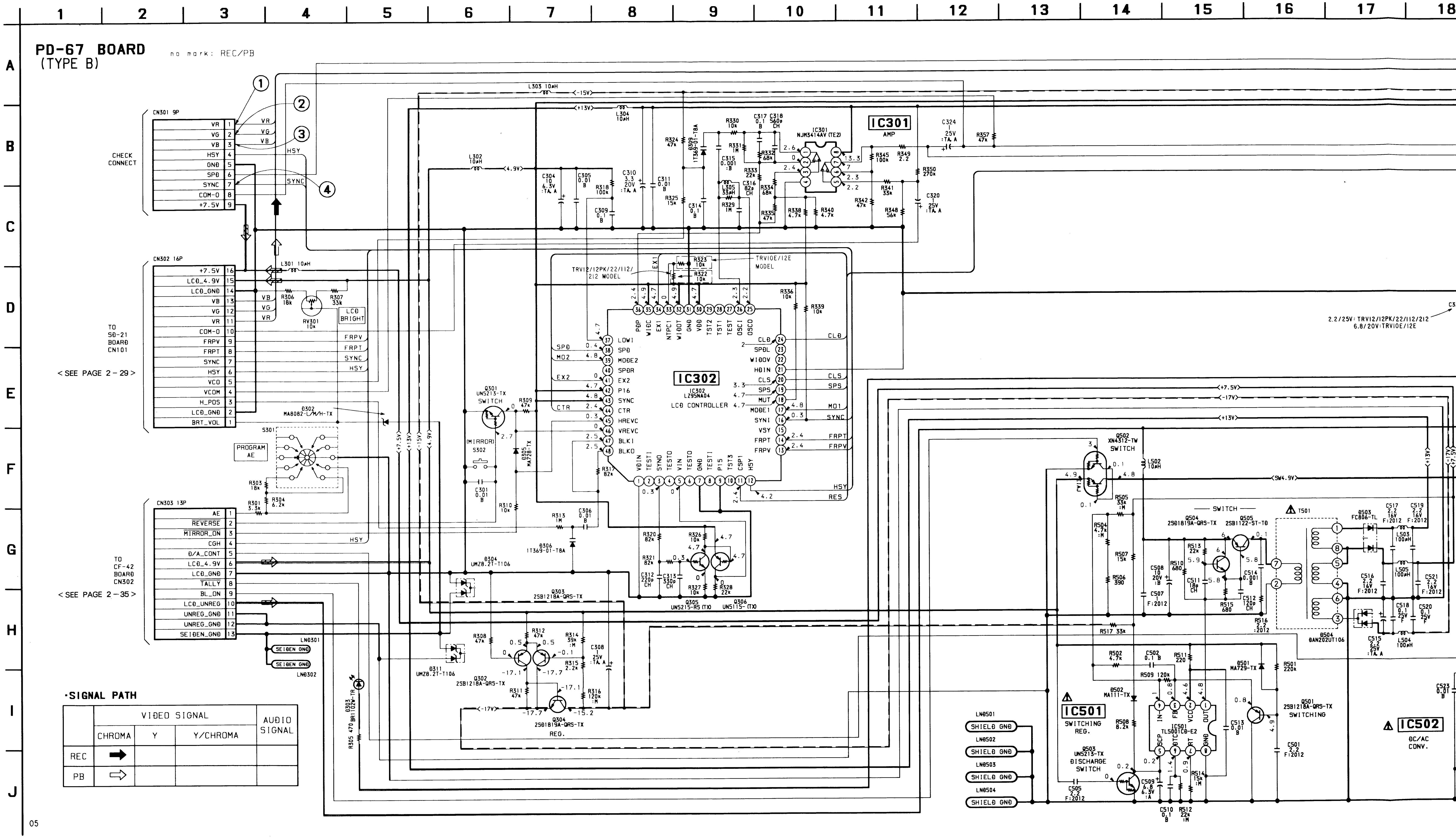
Note:	**Note:**
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une piéce portant le numéro spécifié.

Note:
The com
fied by m
line with r
cal for sa
Replace
number s

PD-67 (LCD) SCHEMATIC DIAGRAM (TYPE B)

– Ref. No.: PD-67 Board; 8,000 Series –

- **See page original service manual supplement-1 9 — 11 for PD-67 BOARD printed wiring board.**



1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J
PD-67 BOARD
(TYPE B)
no mark: REC/PB
CN301 9P
CHECK CONNECT
VR VG VB HSY GND SPD SYNC COM-D +7.5V
CN302 16P
+7.5V LCD_4.9V LCD_GND VB VG VR COM-D FRPV FRPT SYNC HSY VCO VCOM H_POS LCD_GND BRT_VOL
TO SD-21 BOARD CN101
< SEE PAGE 2 – 29 >
CN303 13P
AE REVERSE MIRROR_ON CGH D/A_CONT LCD_4.9V LCD_GND TALLY BL_ON LCD_UNREG UNREG_GND UNREG_GND SEIDEN_GND
TO CF-42 BOARD CN302
< SEE PAGE 2 – 35 >
IC301 AMP
IC301 NJM3414AV (TE2)
IC302
IC302 LZ95NA04 LCD CONTROLLER
TRV12/12PK/22/112/212 MODEL
TRV10E/12E MODEL
Q301 UN5213-TX SWITCH
(MIRROR) S302
D302 MA8082-(K8)-TX
S301
PROGRAM AE
RV301 10k
LCD BRIGHT
L301 10μH
L302 10μH
L303 10μH
L304 10μH
Q302 2SB1218A-QRS-TX
Q303 2SB1218A-QRS-TX
Q304 2SD1819A-QRS-TX REG.
Q305 UN5215-R5 (TX)
Q306 UN5115-(TX)
D304 UMZ8.2T-T106
D311 UMZ8.2T-T106
D306 1T369-01-T8A
D303 BR1102W-TR
Q502 XN4312-TW SWITCH
Q504 2SD1819A-QRS-TX
Q505 2SB1122-ST-TD
SWITCH
T501
D503 FC806-TL
D504 8AN202UT106
IC501 SWITCHING REG.
IC501 TL5001C0-E2
Q503 UN5213-TX DISCHARGE SWITCH
Q501 2SB1218A-QRS-TX SWITCHING
D501 MA729-TX
D502 MA111-TX
IC502 DC/AC CONV.
LN0301 SEIDEN GND
LN0302 SEIDEN GND
LN0501 SHIELD GND
LN0502 SHIELD GND
LN0503 SHIELD GND
LN0504 SHIELD GND
2.2/25V: TRV12/12PK/22/112/212
6.8/20V: TRV10E/12E

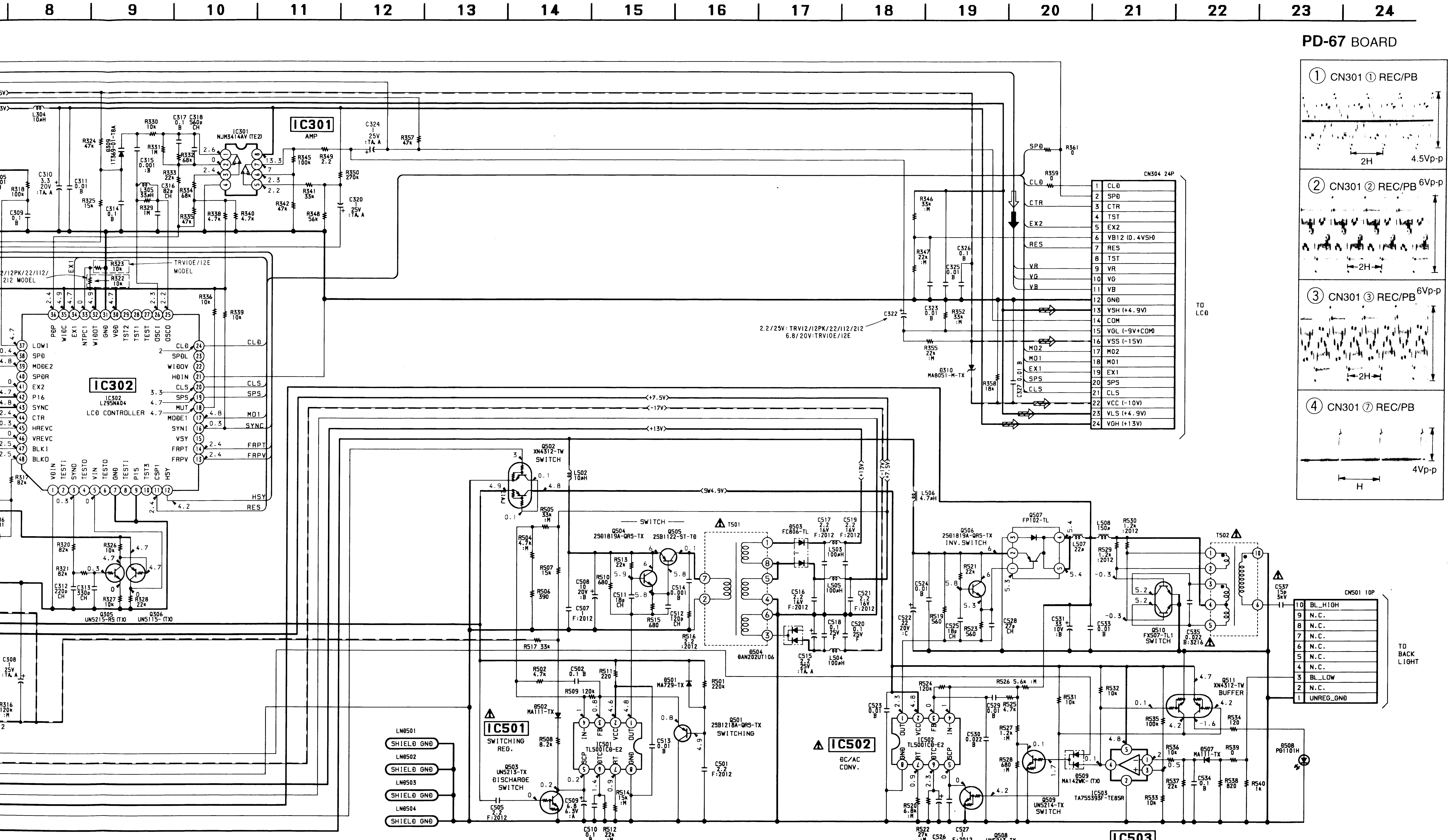
·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡			
PB	⇨			

05

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. ne les remplacer que par une piéce portant le numéro spécifié.

PD-67 BOARD


8
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14
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16
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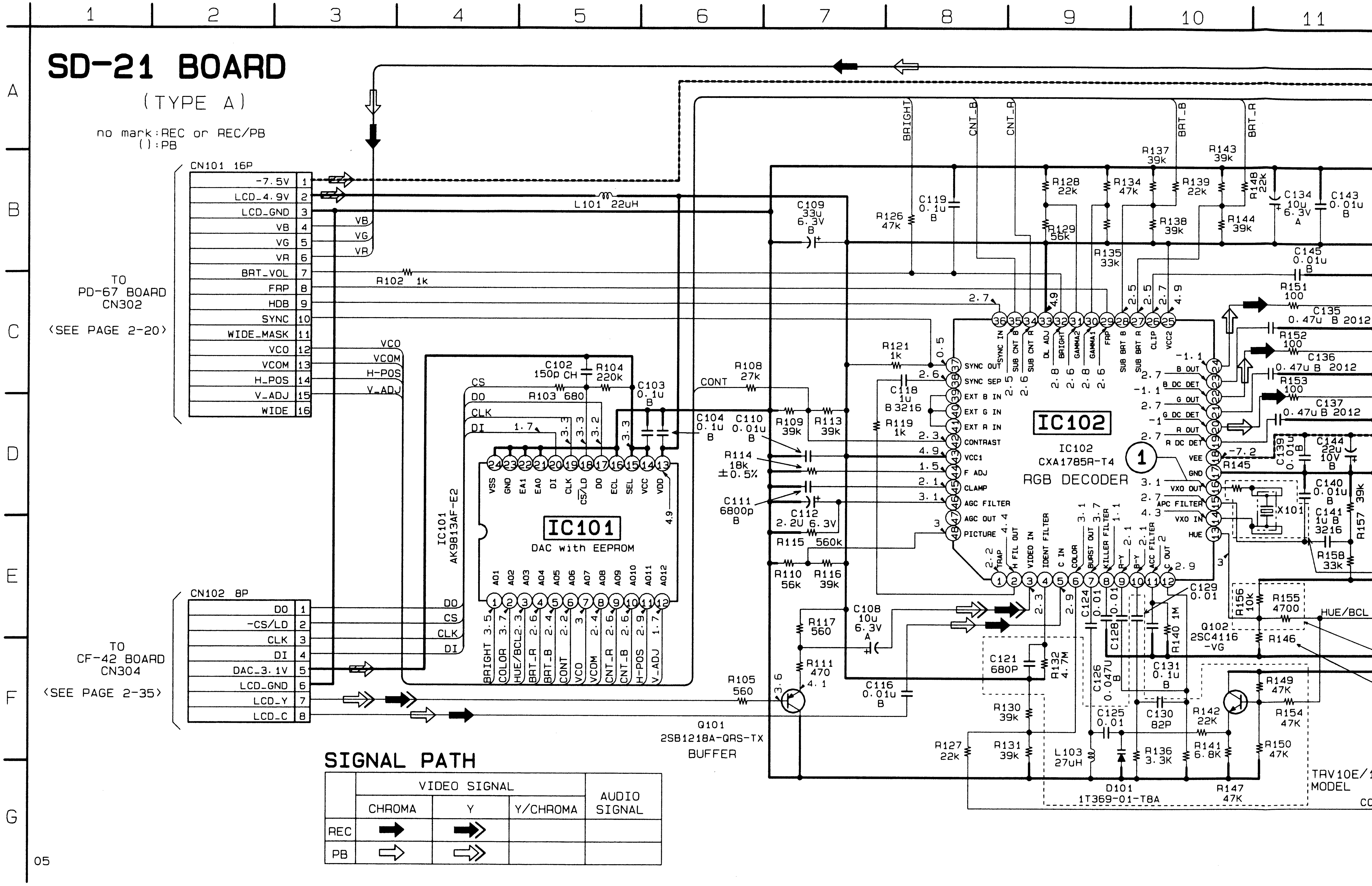
21
22
23
24
IC301
AMP
IC301 NJM3414AV (TE2)
IC302
IC302 LZ9SNA04
LCD CONTROLLER
TRV10E/12E MODEL
2/12PK/22/112/212 MODEL
CN304 24P
1 CLD
2 SPD
3 CTR
4 TST
5 EX2
6 VB12 (0.4VSH)
7 RES
8 TST
9 VR
10 VG
11 VB
12 GND
13 VSH (+4.9V)
14 COM
15 VGL (-9V+COM)
16 VSS (-15V)
17 MO2
18 MO1
19 EX1
20 SPS
21 CLS
22 VCC (-10V)
23 VLS (+4.9V)
24 VGH (+13V)
TO LCD
2.2/25V: TRV12/12PK/22/112/212
6.8/20V: TRV10E/12E
D310 MA8051-M-TX
(+7.5V)
(-17V)
(+13V)
(SW4.9V)
Q502 XN4312-TW SWITCH
SWITCH
Q504 2SB1819A-QRS-TX
Q505 2SB1122-ST-TB
T501
D503 FC806-TL
D504 0AN202UT106
Q506 2SB1819A-QRS-TX INV. SWITCH
Q507 FP102-TL
T502
Q510 FX507-TL1 SWITCH
CN501 10P
10 BL_HIGH
9 N.C.
8 N.C.
7 N.C.
6 N.C.
5 N.C.
4 N.C.
3 BL_LOW
2 N.C.
1 UNREG_GND
TO BACK LIGHT
Q305 UN5215-RS (TX)
Q306 UN5115- (TX)
LND501 SHIELD GND
LND502 SHIELD GND
LND503 SHIELD GND
LND504 SHIELD GND
IC501
SWITCHING REG.
IC501 TL5001CD-E2
Q503 UN5213-TX DISCHARGE SWITCH
D502 MA111-TX
D501 MA729-TX
Q501 2SB1218A-QRS-TX SWITCHING
IC502
DC/AC CONV.
IC502 TL5001CD-E2
Q508 UN5213-TX PROTECT SWITCH
Q509 UN5214-TX SWITCH
D509 MA142WK-(TX)
IC503 TA75S393F-TE85R
IC503
AMP
Q511 XN4312-TW BUFFER
D507 MA111-TX
D508 PG1101H
① CN301 ① REC/PB
2H
4.5Vp-p
② CN301 ② REC/PB
6Vp-p
2H
③ CN301 ③ REC/PB
6Vp-p
2H
④ CN301 ⑦ REC/PB
4Vp-p
H

SD-21 (R.G.B DECODER) SCHEMATIC DIAGRAM (TYPE A)

– Ref. No.: SD-21 Board; 8,000 Series –

- **See page original service manual 4-65 for SD-21 Board printed wiring board.**


1
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3
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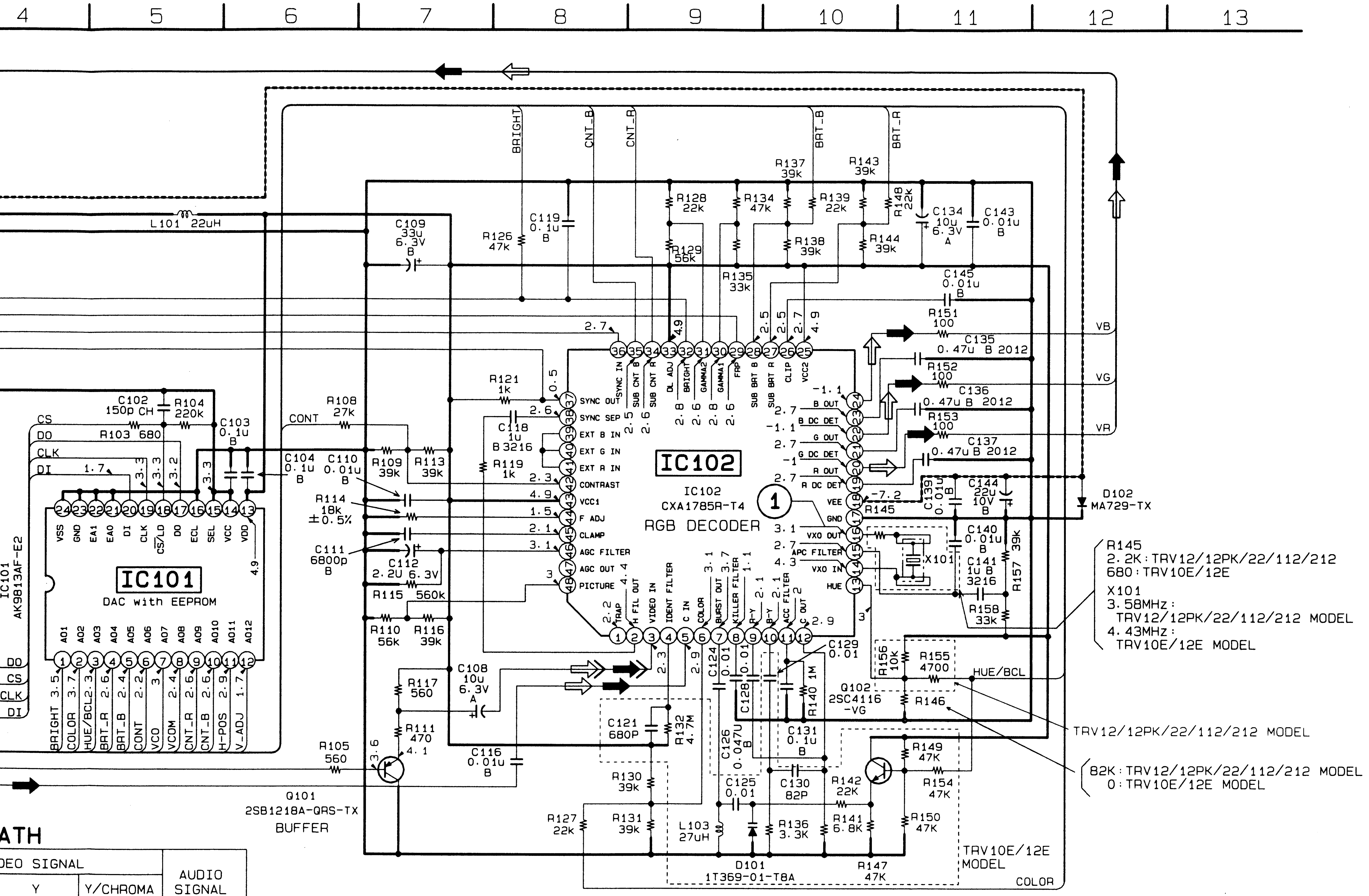
8
9
10
11
A
B
C
D
E
F
G
SD-21 BOARD
(TYPE A)
no mark:REC or REC/PB
( ):PB
CN101 16P
-7.5V
LCD_4.9V
LCD_GND
VB
VG
VR
BRT_VOL
FRP
HDB
SYNC
WIDE_MASK
VCO
VCOM
H_POS
V_ADJ
WIDE
TO
PD-67 BOARD
CN302
<SEE PAGE 2-20>
L101 22uH
R102 1k
CN102 8P
DO
-CS/LD
CLK
DI
DAC_3.1V
LCD_GND
LCD_Y
LCD_C
TO
CF-42 BOARD
CN304
<SEE PAGE 2-35>
IC101
AK9813AF-E2
IC101
DAC with EEPROM
C102 150p CH
R104 220k
R103 680
C103 0.1u B
C104 0.1u B
C110 0.01u B
CONT
R108 27k
R109 39k
R113 39k
R114 18k ±0.5%
C111 6800p B
C112 2.2U 6.3V
R115 560k
R110 56k
R116 39k
R117 560
C108 10u 6.3V A
R111 470
R105 560
C116 0.01u B
Q101
2SB1218A-QRS-TX
BUFFER
C109 33u 6.3V B
R126 47k
C119 0.1u B
R121 1k
C118 1u B3216
R119 1k
BRIGHT
CNT_B
CNT_R
BRT_B
BRT_R
R128 22k
R134 47k
R139 22k
R137 39k
R143 39k
R148 22k
R129 56k
R138 39k
R144 39k
R135 33k
C134 10u 6.3V A
C143 0.01u B
C145 0.01u
R151 100
C135 0.47u B 2012
R152 100
C136 0.47u B 2012
R153 100
C137 0.47u B 2012
C139 0.01u B
C144 22u 10V B
R145
C140 0.01u B
C141 1u B 3216
R157 39k
X101
R158 33k
IC102
IC102
CXA1785R-T4
RGB DECODER
SYNC OUT
SYNC SEP
EXT B IN
EXT G IN
EXT R IN
CONTRAST
VCC1
F ADJ
CLAMP
AGC FILTER
AGC OUT
PICTURE
B OUT
B DC DET
G OUT
G DC DET
R OUT
R DC DET
VEE
GND
VXO OUT
APC FILTER
VXO IN
HUE
C129 0.01
R156 10k
R155 4700
HUE/BCL
Q102
2SC4116
-VG
R146
C121 680P
R132 4.7M
C124 0.01
C128 0.01
C126 0.047U B
C131 0.1u B
R140 1M
R149 47K
R154 47K
R142 22K
R141 6.8K
R150 47K
R130 39k
R131 39k
R127 22k
L103 27uH
C125 0.01
C130 82P
R136 3.3K
D101
1T369-01-T8A
R147 47K
TRV10E/
MODEL
05

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»		
PB	⇨	⇨»		

g board.


4
5
6
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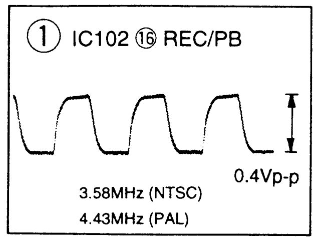
8
9
10
11
12
13
IC102
CXA1785A-T4
RGB DECODER
IC101
AK9B13AF-E2
IC101
DAC with EEPROM
L101 22uH
C109 33u 6.3V B
C119 0.1u B
R126 47k
BRIGHT
CNT_B
CNT_R
BRT_B
BRT_R
R137 39k
R143 39k
R128 22k
R134 47k
R139 22k
R148 22k
C134 10u 6.3V A
C143 0.01u B
R129 56k
R138 39k
R144 39k
R135 33k
C145 0.01u B
R151 100
C135 0.47u B 2012
R152 100
C136 0.47u B 2012
R153 100
C137 0.47u B 2012
VB
VG
VR
D102 MA729-TX
R121 1k
C118 1u B 3216
R119 1k
R108 27k
CONT
C102 150p CH
R104 220k
C103 0.1u B
R103 680
CS
DO
CLK
DI
C104 0.1u B
C110 0.01u B
R109 39k
R113 39k
R114 18k ±0.5%
C111 6800p B
C112 2.2U 6.3V
R115 560k
R110 56k
R116 39k
R117 560
R111 470
R105 560
C108 10u 6.3V A
C116 0.01u B
Q101 2SB1218A-QRS-TX BUFFER
C121 680P
R132 4.7M
R130 39k
R131 39k
R127 22k
L103 27uH
C124 0.01
C126 0.047U B
C125 0.01
C128 0.01
C130 82P
C131 0.1u B
R136 3.3K
R140 1M
R142 22K
R141 6.8K
D101 1T369-01-T8A
R147 47K
C129 0.01
Q102 2SC4116 -VG
R146
R156 10k
R155 4700
HUE/BCL
R149 47K
R154 47K
R150 47K
TRV10E/12E MODEL
COLOR
C139 0.01u B
C144 22u 10V B
R145
C140 0.01u B
C141 1u B 3216
X101
R157 39k
R158 33k
SYNC IN
SUB CNT B
SUB CNT R
DL ADJ
BRIGHT
GAMMA2
GAMMA1
FRP
SUB BRT B
SUB BRT R
CLIP
VCC2
SYNC OUT
SYNC SEP
EXT B IN
EXT G IN
EXT R IN
CONTRAST
VCC1
F ADJ
CLAMP
AGC FILTER
AGC OUT
PICTURE
B OUT
B DC DET
G OUT
G DC DET
R OUT
R DC DET
VEE
GND
VXO OUT
APC FILTER
VXO IN
HUE
TRAP
H FIL OUT
VIDEO IN
IDENT FILTER
C IN
COLOR
BURST OUT
KILLER FILTER
R-Y
B-Y
ACC FILTER
C OUT
VSS
GND
EA1
EA0
DI
CLK
CS/LD
DO
ECL
SEL
VCC
VDD
AO1
AO2
AO3
AO4
AO5
AO6
AO7
AO8
AO9
AO10
AO11
AO12
BRIGHT
COLOR
HUE/BCL2
BRT_R
BRT_B
CONT
VCO
VCOM
CNT_R
CNT_B
H-POS
V_ADJ
R145
2.2K : TRV12/12PK/22/112/212
680 : TRV10E/12E
X101
3.58MHz :
TRV12/12PK/22/112/212 MODEL
4.43MHz :
TRV10E/12E MODEL
TRV12/12PK/22/112/212 MODEL
82K : TRV12/12PK/22/112/212 MODEL
0 : TRV10E/12E MODEL

SD-21 BOARD



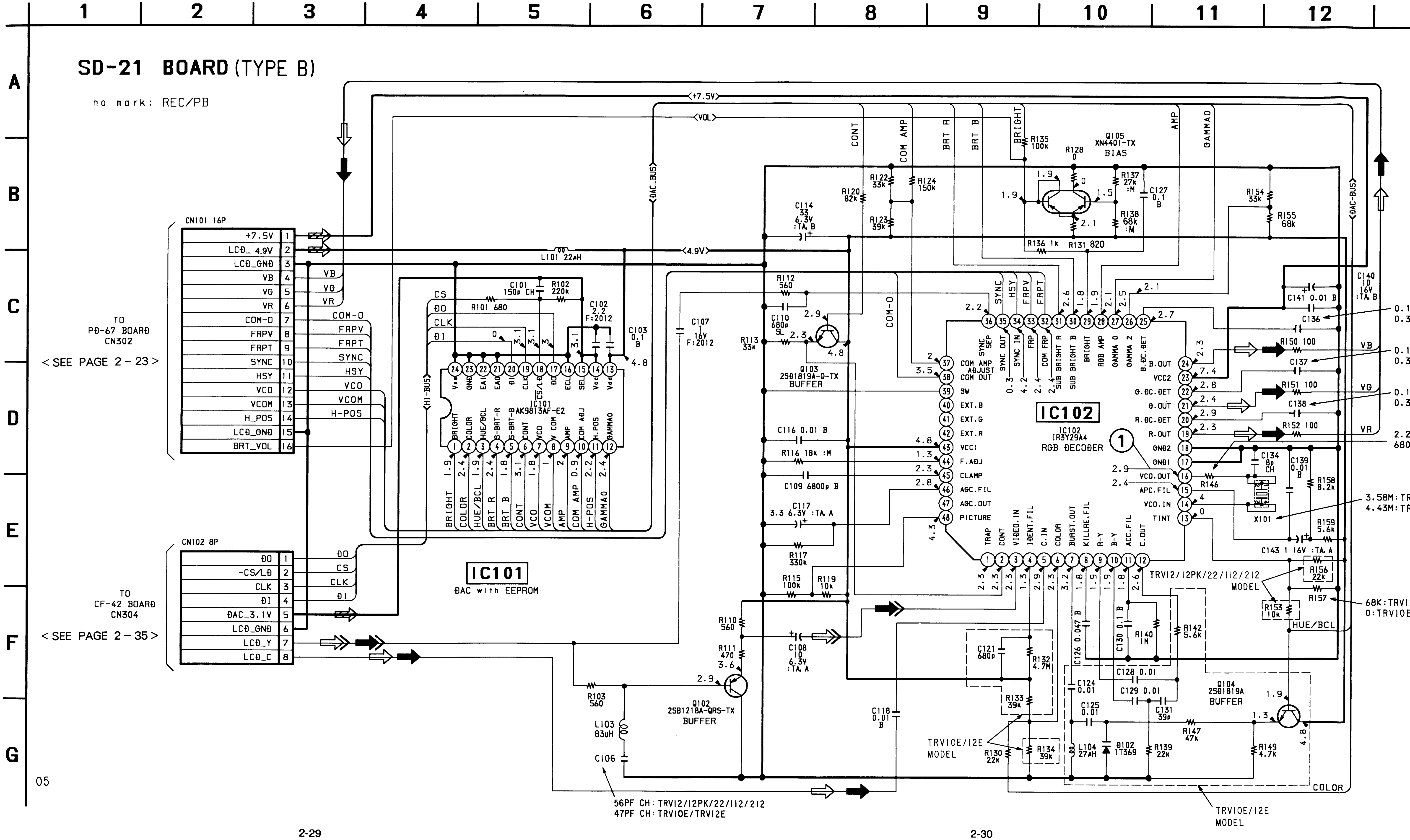
ATH

DEO SIGNAL		AUDIO SIGNAL
Y	Y/CHROMA	
➡		
⇨		

SD-21 (R.G.B DECODER) SCHEMATIC DIAGRAM (TYPE B)

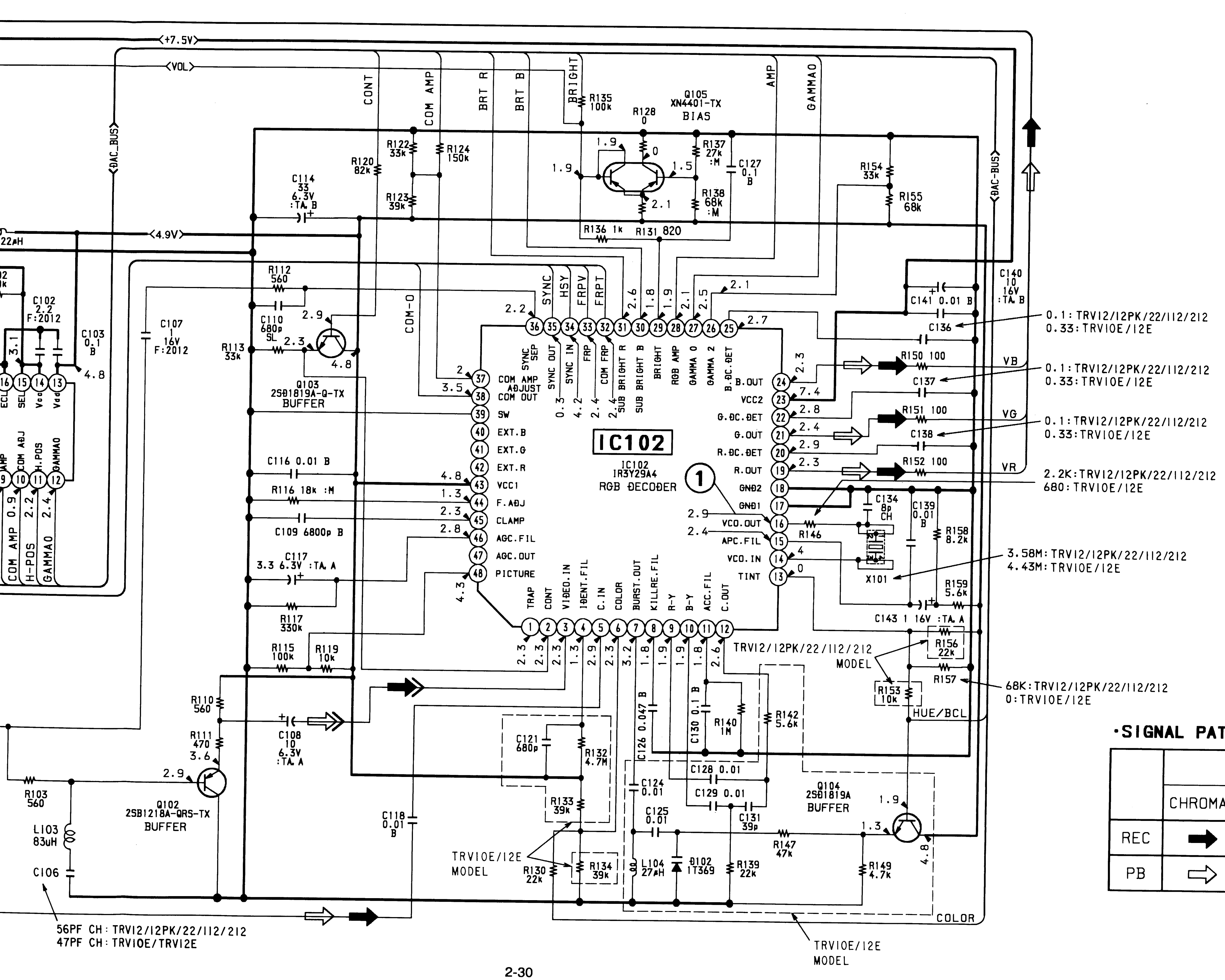
– Ref. No.: SD-21 Board; 8,000 Series –

• See page original service manual supplement-1 15, 16 for SD-21 BOARD printed wiring board.

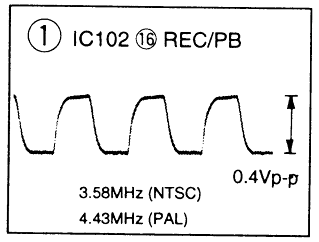


SD-21 BOARD (TYPE B)
no mark: REC/PB
CN101 16P
+7.5V
LCD_4.9V
LCD_GND
VB
VG
VR
COM-O
FRPV
FRPT
SYNC
HSY
VCO
VCOM
H_POS
LCD_GND
BRT_VOL
TO PD-67 BOARD CN302
< SEE PAGE 2 – 23 >
CN102 8P
DO
-CS/LD
CLK
DI
DAC_3.1V
LCD_GND
LCD_Y
LCD_C
TO CF-42 BOARD CN304
< SEE PAGE 2 – 35 >
<+7.5V>
<VOL>
<4.9V>
<DAC_BUS>
<HI-BUS>
L101 22μH
C101 150p CH
R102 220k
R101 680
C102 2.2 F:2012
C103 0.1 B
C107 1 16V F:2012
IC101 AK9813AF-E2
IC101
DAC with EEPROM
BRIGHT
COLOR
HUE/BCL
BRT R
BRT B
CONT
VCO
VCOM
AMP
COM AMP
H-POS
GAMMAO
IC102
IC102 IR3Y29A4
RGB DECODER
Q103 2SB1819A-Q-TX BUFFER
Q102 2SB1218A-QRS-TX BUFFER
Q104 2SB1819A BUFFER
Q105 XN4401-TX BIAS
R135 100k
R128 0
R137 27k :M
C127 0.1 B
R138 68k :M
R136 1k
R131 820
R122 33k
R124 150k
R120 82k
R123 39k
C114 33 6.3V :TA B
R112 560
C110 680p SL
R113 33k
C116 0.01 B
R116 18k :M
C109 6800p B
C117 3.3 6.3V :TA A
R117 330k
R115 100k
R119 10k
R110 560
R111 470
C108 10 6.3V :TA A
R103 560
L103 83uH
C106
56PF CH: TRV12/12PK/22/112/212
47PF CH: TRV10E/TRV12E
C118 0.01 B
C121 680p
R132 4.7M
R133 39k
R130 22k
R134 39k
TRV10E/12E MODEL
C126 0.047 B
C130 0.1 B
R140 1M
R142 5.6k
C124 0.01
C128 0.01
C129 0.01
C125 0.01
C131 39p
L104 27μH
D102 1T369
R139 22k
R147 47k
R149 4.7k
TRV12/12PK/22/112/212 MODEL
R153 10k
R156 22k
R157
HUE/BCL
COLOR
C143 1 16V :TA A
R159 5.6k
X101
R158 8.2k
C139 0.01 B
C134 8p CH
R146
R150 100
R151 100
R152 100
C136
C137
C138
C141 0.01 B
C140 10 16V :TA B
R154 33k
R155 68k
VB
VG
VR
3.58M: TR
4.43M: TR
68K: TRV1
0: TRV10E
1
05

d.


+7.5V
VOL
4.9V
DAC_BUS
CONT
COM AMP
BRT R
BRT B
BRIGHT
AMP
GAMMA0
R135 100k
R128 0
Q105 XN4401-TX BIAS
R137 27k :M
C127 0.1 B
R138 68k :M
R136 1k
R131 820
R122 33k
R124 150k
R120 82k
R123 39k
C114 33 6.3V :TA B
R154 33k
R155 68k
R112 560
C110 680p SL
R113 33k
Q103 2SB1819A-Q-TX BUFFER
C107 1 16V F:2012
C102 2.2 F:2012
C103 0.1 B
C116 0.01 B
R116 18k :M
C109 6800p B
C117 3.3 6.3V :TA A
R117 330k
R115 100k
R119 10k
R110 560
R111 470
C108 10 6.3V :TA A
Q102 2SB1218A-QRS-TX BUFFER
R103 560
L103 83uH
C106
56PF CH: TRV12/12PK/22/112/212
47PF CH: TRV10E/TRV12E
COM-O
IC102
IC102 IR3Y29A4 RGB DECODER
SYNC SEP
SYNC OUT
SYNC IN
FRP
COM FRP
SUB BRIGHT R
SUB BRIGHT B
BRIGHT
RGB AMP
GAMMA 0
GAMMA 2
B.DC.DET
COM AMP ADJUST
COM OUT
SW
EXT.B
EXT.G
EXT.R
VCC1
F.ADJ
CLAMP
AGC.FIL
AGC.OUT
PICTURE
B.OUT
VCC2
G.DC.DET
G.OUT
R.DC.DET
R.OUT
GND2
GND1
VCO.OUT
APC.FIL
VCO.IN
TINT
TRAP
CONT
VIDEO.IN
IDENT.FIL
C.IN
COLOR
BURST.OUT
KILLRE.FIL
R-Y
B-Y
ACC.FIL
C.OUT
SYNC
HSY
FRPV
FRPT
C140 10 16V :TA B
C141 0.01 B
C136
0.1: TRV12/12PK/22/112/212
0.33: TRV10E/12E
R150 100
VB
C137
R151 100
VG
C138
R152 100
VR
2.2K: TRV12/12PK/22/112/212
680: TRV10E/12E
C134 8p CH
C139 0.01 B
R158 8.2k
R146
X101
3.58M: TRV12/12PK/22/112/212
4.43M: TRV10E/12E
R159 5.6k
C143 1 16V :TA A
TRV12/12PK/22/112/212 MODEL
R156 22k
R157
R153 10k
HUE/BCL
68K: TRV12/12PK/22/112/212
0: TRV10E/12E
C121 680p
R132 4.7M
R133 39k
C126 0.047 B
C130 0.1 B
R140 1M
R142 5.6k
C128 0.01
C129 0.01
C124 0.01
C125 0.01
C131 39p
Q104 2SB1819A BUFFER
R147 47k
R149 4.7k
C118 0.01 B
TRV10E/12E MODEL
R130 22k
R134 39k
L104 27µH
D102 1T369
R139 22k
COLOR
TRV10E/12E MODEL
COM AMP
H-POS
GAMMA0
COM ADJ
①

SD-21 BOARD



•SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛		
PB	⇨	⇨		

There are cases that the part isn't mounted in this model is printed on this dia

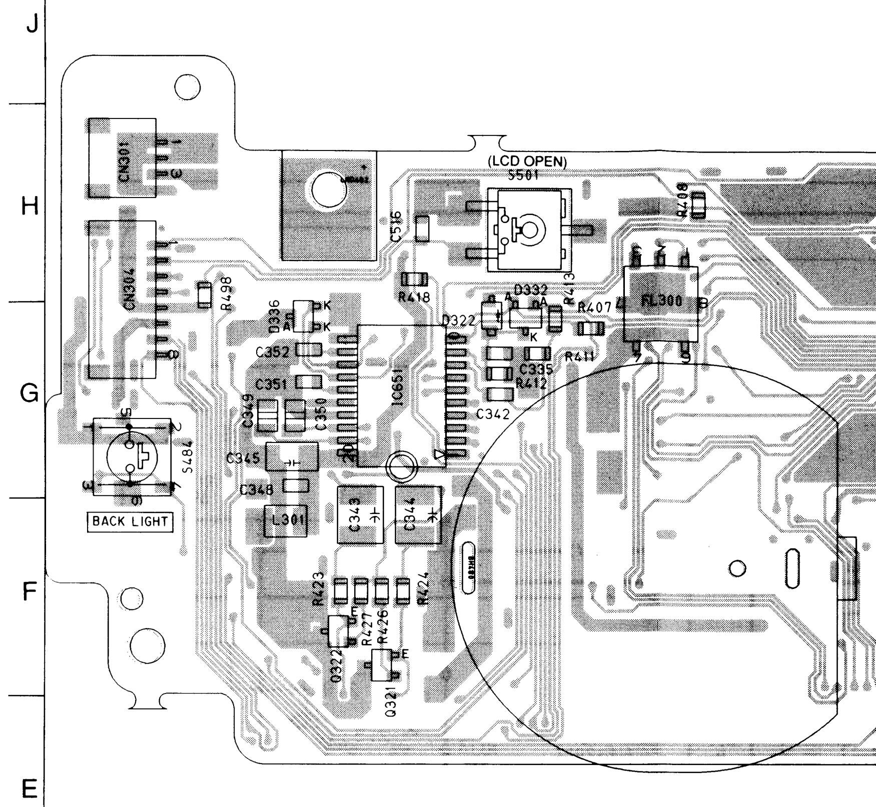
CF-42 (SYSTEM CONTROL) PRINTED WIRING BOARD

– Ref. No.: CF-42 Board; 2,000 Series –

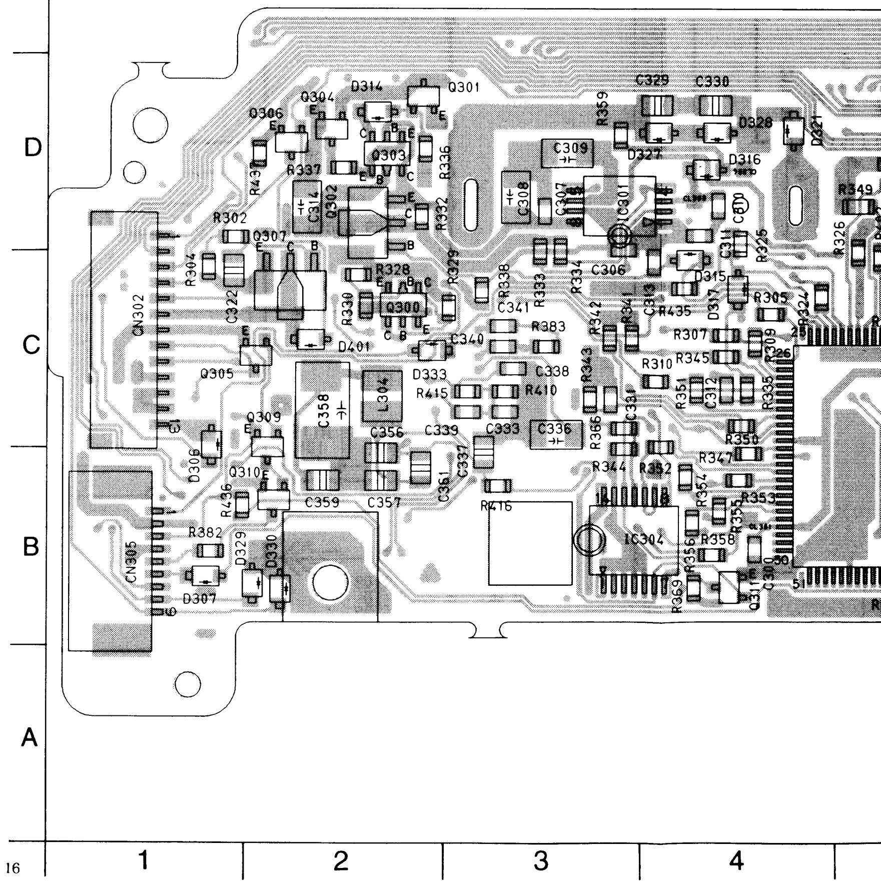
CF-42 BOARD

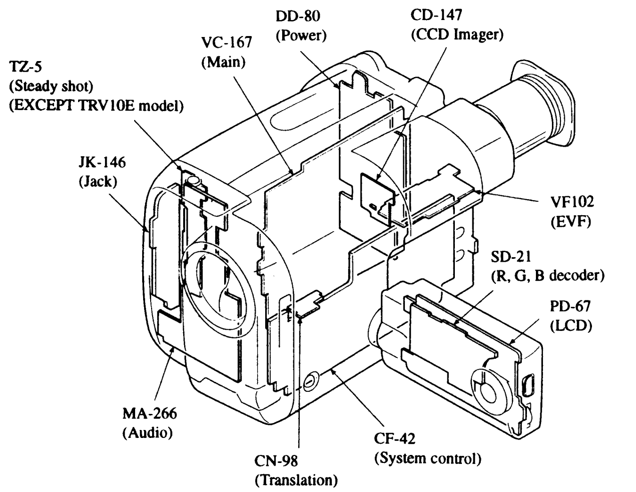
BH480	F-3	C345	G-2	D332	G-3	Q316	B-9	R347	B-4	R387	C-7	R438	C-9
C300	B-4	C348	G-2	D333	C-3			R348	G-6	R388	B-5	R490	F-8
C301	C-7	C349	G-2	D336	G-2	R300	D-5	R349	D-5	R389	C-6	R493	B-9
C302	C-6	C350	G-2	D337	A-7	R301	C-6	R350	C-4	R390	C-6	R494	A-10
C303	C-6	C351	G-2	D401	C-2	R302	D-2	R351	C-4	R391	C-10	R495	A-10
C304	C-6	C352	G-2	D402	C-9	R303	D-5	R352	B-4	R392	B-7	R496	A-10
C305	C-6	C356	C-2			R304	C-1	R353	B-4	R393	B-8	R498	G-2
C306	C-4	C357	B-2	FL300	G-4	R305	C-4	R354	B-4	R394	C-10	R501	G-9
C308	D-3	C358	C-2			R306	A-7	R355	B-4	R395	F-8		
C310	D-4	C359	B-2	IC301	D-4	R307	C-4	R356	B-4	R397	C-6	RV30	G-10
C311	C-4	C516	H-2	IC302	B-7	R308	D-5	R357	C-7	R398	B-7		
C312	C-4			IC303	C-5	R309	C-4	R358	B-4	R399	C-6	S300	A-8
C313	C-4	CN301	H-1	IC304	B-4	R310	C-4	R359	D-3	R400	C-10	S301	F-7
C314	D-2	CN302	C-1	IC651	G-3	R311	C-5	R360	F-8	R401	C-9	S302	F-6
C315	B-6	CN304	H-1			R312	D-5	R361	F-8	R402	C-5	S303	E-9
C316	B-6	CN305	B-1	J480	A-10	R313	C-5	R362	B-9	R403	C-5	S304	A-9
C317	C-6	CN306	A-6	J481	B-10	R317	C-5	R364	B-5	R404	D-5	S305	A-7
C318	B-6	CN480	D-8			R318	D-5	R366	C-3	R406	D-9	S480	H-7
C319	B-6	CN481	C-10	L300	C-7	R319	C-5	R367	B-7	R407	G-4	S481	G-7
C320	B-6			L301	F-2	R320	B-9	R368	A-7	R408	H-5	S482	E-7
C321	C-6	D301	C-10	L304	C-2	R322	A-9	R369	B-4	R409	G-10	S483	A-9
C322	C-1	D307	B-1			R324	C-4	R370	B-7	R410	C-3	S484	G-1
C323	B-7	D310	H-10	PS301	A-8	R325	C-4	R371	B-7	R411	G-4	S485	G-9
C326	B-7	D311	A-10			R326	C-5	R372	B-6	R412	G-3	S486	G-8
C327	B-8	D314	D-2	Q301	D-3	R327	B-8	R373	B-6	R413	G-4	S488	A-7
C328	B-8	D315	C-4	Q302	D-2	R332	D-3	R374	B-6	R414	A-9	S501	H-3
C332	B-10	D316	D-4	Q303	D-2	R333	C-3	R375	C-6	R415	C-3		
C333	C-3	D317	C-4	Q304	D-2	R334	C-3	R376	B-6	R416	B-3	X302	G-6
C335	G-3	D318	B-10	Q305	C-2	R335	C-4	R377	B-6	R418	G-3		
C336	C-3	D321	D-5	Q306	D-2	R337	D-2	R378	C-6	R421	G-9	XTL301	C-6
C337	B-3	D322	G-3	Q307	C-2	R338	C-3	R379	C-6	R424	F-3		
C339	C-3	D323	C-7	Q309	C-2	R341	C-3	R382	B-1	R430	B-7		
C340	C-3	D324	A-10	Q310	B-2	R342	C-3	R383	C-3	R431	F-7		
C341	C-3	D327	D-4	Q311	B-4	R343	C-3	R384	C-6	R432	F-7		
C342	G-3	D328	D-4	Q314	C-10	R344	B-3	R385	D-10	R435	C-4		
C344	F-2	D331	G-9	Q315	C-10	R345	C-4	R386	C-7	R437	D-2		

CF-42 BOARD (SIDE A)

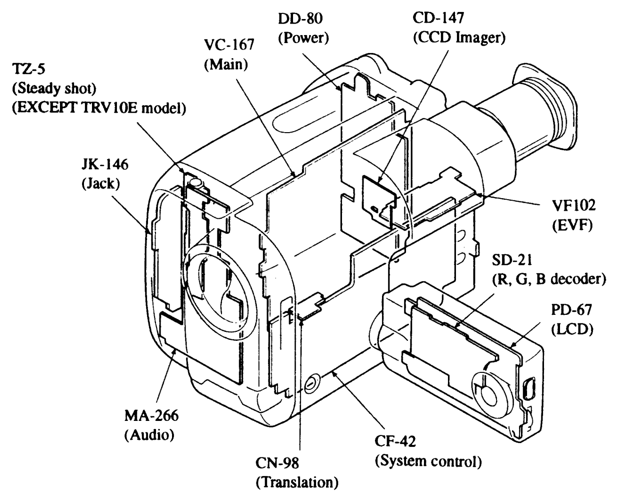

J
H
G
F
E
CN301
(LCD OPEN)
S501
C516
R408
CN304
R498
D336
R418
D332
R413
R407
FL300
D322
C352
C351
IC651
C335
R412
R411
C342
C349
C350
S484
C345
C348
L301
C343
C344
BACK LIGHT
R423
R427
R426
R424
Q322
Q321

CF-42 BOARD (SIDE B)

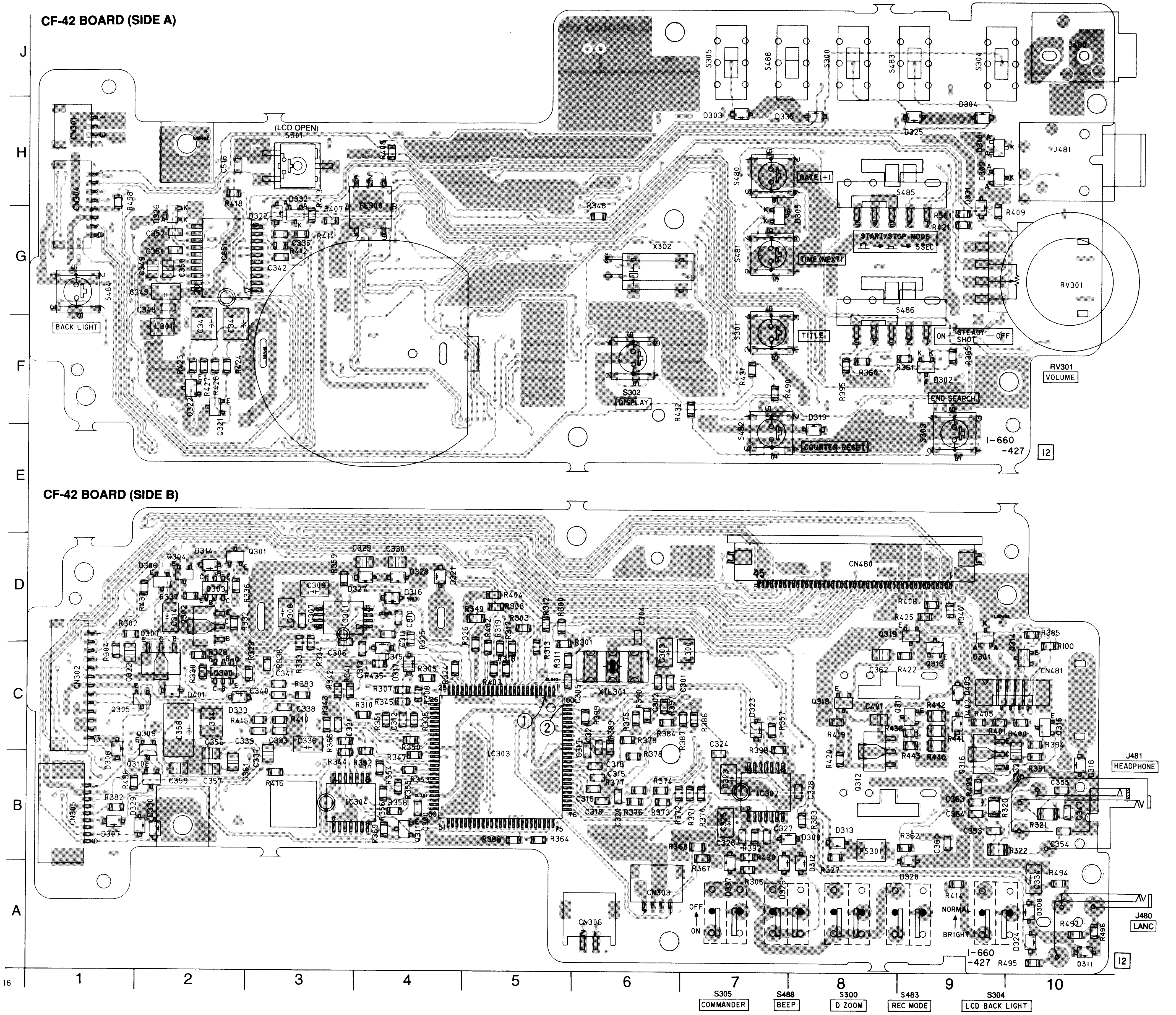

D
C
B
A
1
2
3
4
D314
Q301
Q304
Q306
R359
C329
C330
C309
D328
R337
Q303
D327
D316
R436
R336
R332
C308
C307
IC301
R349
R302
Q307
C314
R326
R304
C322
R330
R328
Q300
R338
R333
R334
C306
D315
R305
C341
R383
R342
R435
R307
CN302
C340
Q305
D401
D333
C338
R310
R345
R415
R410
R343
C358
L304
C356
C339
C333
C336
R366
Q309
C337
R347
R344
R352
Q310
C361
C359
C357
R416
R382
IC304
CN305
D329
D330
D307
R358
R353


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(Steady shot)
(EXCEPT TRV10E model)
JK-146
(Jack)
VF102
(EVF)
SD-21
(R, G, B decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

G-3	Q316	B-9	R347	B-4	R387	C-7	R438	C-9
C-3			R348	G-6	R388	B-5	R490	F-8
G-2	R300	D-5	R349	D-5	R389	C-6	R493	B-9
A-7	R301	C-6	R350	C-4	R390	C-6	R494	A-10
C-2	R302	D-2	R351	C-4	R391	C-10	R495	A-10
C-9	R303	D-5	R352	B-4	R392	B-7	R496	A-10
	R304	C-1	R353	B-4	R393	B-8	R498	G-2
G-4	R305	C-4	R354	B-4	R394	C-10	R501	G-9
	R306	A-7	R355	B-4	R395	F-8		
D-4	R307	C-4	R356	B-4	R397	C-6	RV30	G-10
B-7	R308	D-5	R357	C-7	R398	B-7		
C-5	R309	C-4	R358	B-4	R399	C-6	S300	A-8
B-4	R310	C-4	R359	D-3	R400	C-10	S301	F-7
G-3	R311	C-5	R360	F-8	R401	C-9	S302	F-6
	R312	D-5	R361	F-8	R402	C-5	S303	E-9
A-10	R313	C-5	R362	B-9	R403	C-5	S304	A-9
B-10	R317	C-5	R364	B-5	R404	D-5	S305	A-7
	R318	D-5	R366	C-3	R406	D-9	S480	H-7
C-7	R319	C-5	R367	B-7	R407	G-4	S481	G-7
F-2	R320	B-9	R368	A-7	R408	H-5	S482	E-7
C-2	R322	A-9	R369	B-4	R409	G-10	S483	A-9
	R324	C-4	R370	B-7	R410	C-3	S484	G-1
A-8	R325	C-4	R371	B-7	R411	G-4	S485	G-9
	R326	C-5	R372	B-6	R412	G-3	S486	G-8
D-3	R327	B-8	R373	B-6	R413	G-4	S488	A-7
D-2	R332	D-3	R374	B-6	R414	A-9	S501	H-3
D-2	R333	C-3	R375	C-6	R415	C-3		
D-2	R334	C-3	R376	B-6	R416	B-3	X302	G-6
C-2	R335	C-4	R377	B-6	R418	G-3		
D-2	R337	D-2	R378	C-6	R421	G-9	XTL301	C-6
C-2	R338	C-3	R379	C-6	R424	F-3		
C-2	R341	C-3	R382	B-1	R430	B-7		
B-2	R342	C-3	R383	C-3	R431	F-7		
B-4	R343	C-3	R384	C-6	R432	F-7		
C-10	R344	B-3	R385	D-10	R435	C-4		
C-10	R345	C-4	R386	C-7	R437	D-2		

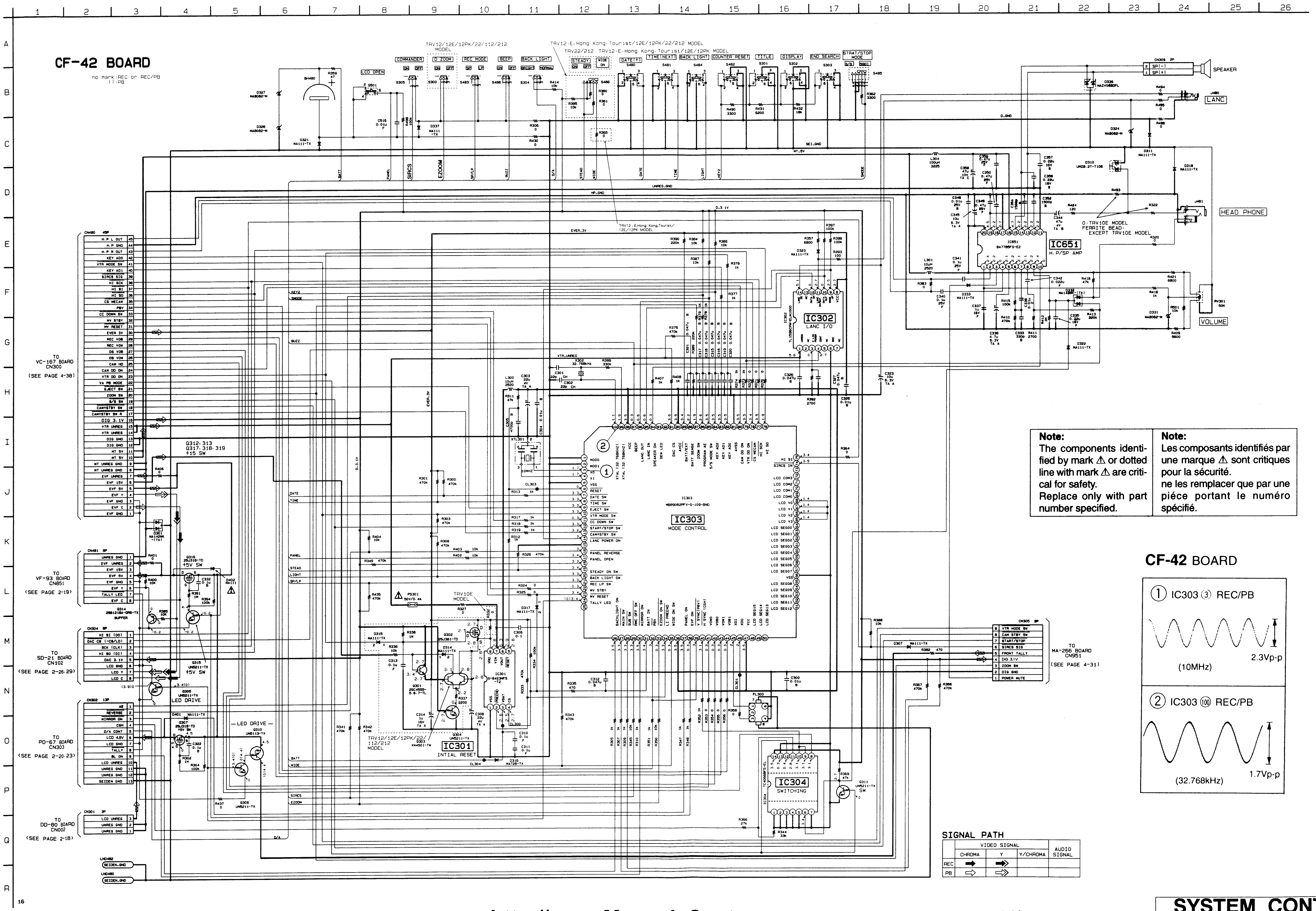

DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(Steady shot)
(EXCEPT TRV10E model)
JK-146
(Jack)
VF102
(EVF)
SD-21
(R, G, B decoder)
PD-67
(LCD)
MA-266
(Audio)
CN-98
(Translation)
CF-42
(System control)

There are cases that the part isn't mounted in this model is printed on this diagram.


CF-42 BOARD (SIDE A)
CF-42 BOARD (SIDE B)
J
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
16
(LCD OPEN)
S501
FL300
IC651
X302
S302
DISPLAY
DATE(+)
TIME(NEXT)
TITLE
COUNTER RESET
START/STOP MODE
5SEC
STEADY SHOT
ON
OFF
END SEARCH
BACK LIGHT
RV301
VOLUME
J481
J480
S305
S488
S300
S483
S304
S480
S481
S301
S482
S303
S484
S485
S486
CN301
CN304
CN302
CN305
CN303
CN306
CN480
CN481
IC301
IC302
IC303
IC304
XTL301
PS301
HEADPHONE
LANC
OFF
ON
NORMAL
BRIGHT
1-660-427
1-660
-427
12
COMMANDER
BEEP
D ZOOM
REC MODE
LCD BACK LIGHT

CF-42 (SYSTEM CONTROL) SCHEMATIC DIAGRAM

– Ref. No.: CF-42 Board; 2,000 Series –


CF-42 BOARD
no mark:REC or REC/PB
( ):PB
IC303
MODE CONTROL
IC301
INTIAL RESET
IC302
LANC I/O
IC304
SWITCHING
IC651
H.P/SP AMP
SPEAKER
LANC
HEAD PHONE
VOLUME
TO VC-167 BOARD CN300 (SEE PAGE 4-38)
TO VF-93 BOARD CN851 (SEE PAGE 2-19)
TO SD-21 BOARD CN102 (SEE PAGE 2-26.29)
TO PD-67 BOARD CN303 (SEE PAGE 2-20.23)
TO DD-80 BOARD CN002 (SEE PAGE 2-18)
TO MA-266 BOARD CN951 (SEE PAGE 4-31)
LED DRIVE
CF-42 BOARD
① IC303 ③ REC/PB
2.3Vp-p
(10MHz)
② IC303 ⑩⓪ REC/PB
1.7Vp-p
(32.768kHz)

Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
ne les remplacer que par une piéce portant le numéro spécifié.

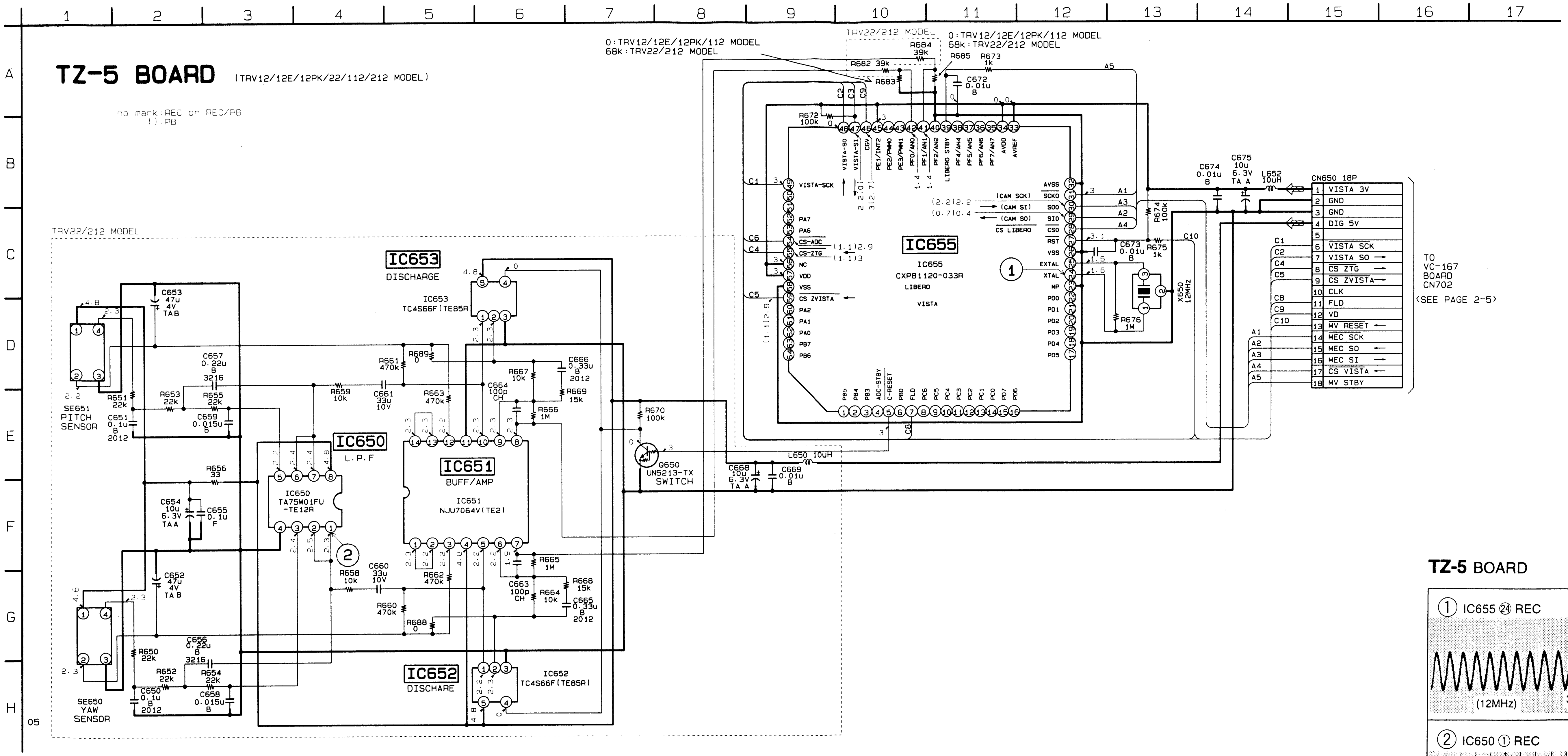
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		
PB	⇨	⇨		

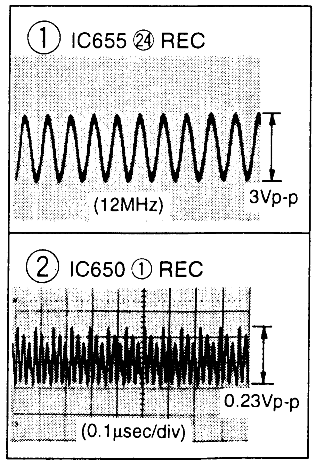
TZ-5 (STEADY SHOT) SCHEMATIC DIAGRAM

– Ref. No.: TZ-5 Board; 5,000 Series –

- **See page original service manual 4-51 for TZ-5 BOARD printed wiring board.**


TZ-5 BOARD (TRV12/12E/12PK/22/112/212 MODEL)
no mark:REC or REC/PB
( ):PB
TRV22/212 MODEL
0:TRV12/12E/12PK/112 MODEL
68k:TRV22/212 MODEL
IC653 DISCHARGE
IC653 TC4S66F(TE85R)
IC650 L.P.F
IC650 TA75W01FU -TE12R
IC651 BUFF/AMP
IC651 NJU7064V(TE2)
IC652 DISCHARE
IC652 TC4S66F(TE85R)
IC655
IC655 CXP81120-033R
LIBERO
VISTA
SE651 PITCH SENSOR
SE650 YAW SENSOR
Q650 UN5213-TX SWITCH
X650 12MHz
CN650 18P
1 VISTA 3V
2 GND
3 GND
4 DIG 5V
5
6 VISTA SCK
7 VISTA SO
8 CS ZTG
9 CS ZVISTA
10 CLK
11 FLD
12 VD
13 MV RESET
14 MEC SCK
15 MEC SO
16 MEC SI
17 CS VISTA
18 MV STBY
TO VC-167 BOARD CN702 (SEE PAGE 2-5)
05

TZ-5 BOARD



SECTION 3
DIFFERENT PARTS LIST

3-1. EXPLODED VIEWS

NOTE:

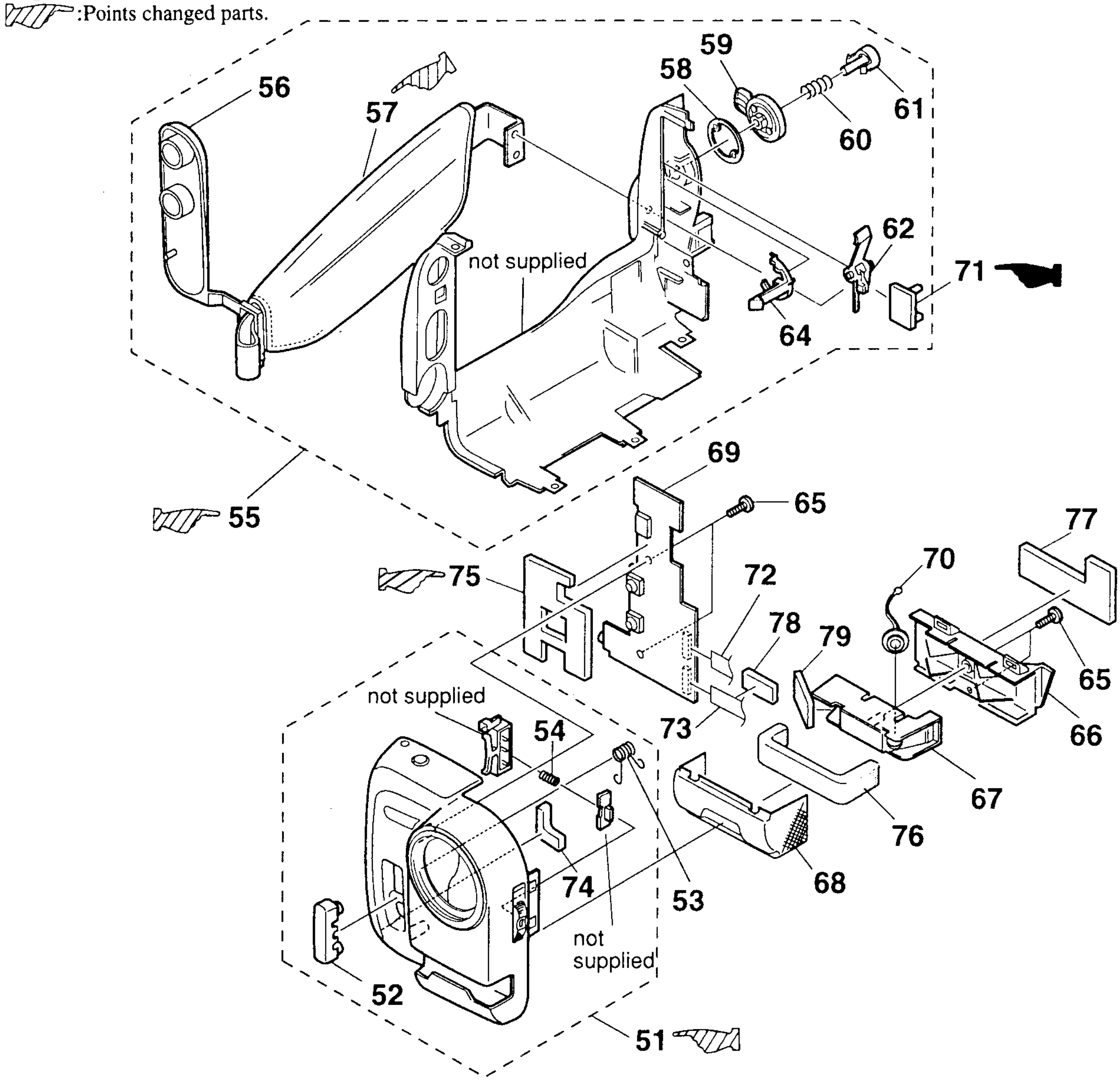
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- (SEE PAGE □□): Pages on the original service manual.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiquens pour la sécurité.
Ne les remplacer que par une pièce portant le neméro spécifié.

3-1-1. CABINET (L), F PANEL SECTION (SEE PAGE 5-2)

☛:Points deleted parts.
☞:Points changed parts.

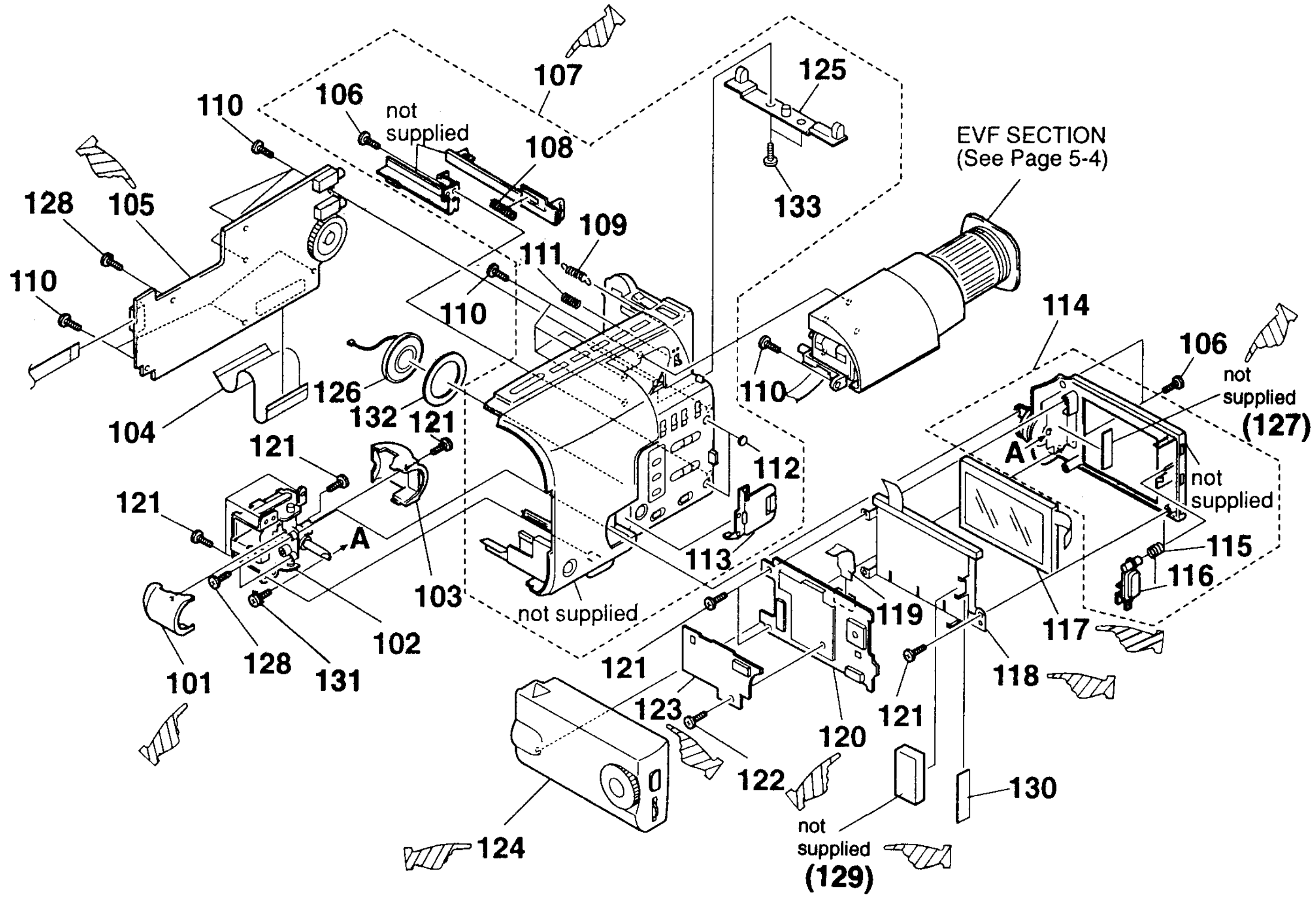


CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK			
Ref. No.	Part No.	Description	Remarks
51	X-3946-006-1	PANEL ASSY, FRONT (TRV11/TRV11E)	
51	X-3946-324-1	PANEL ASSY, FRONT (TRV21/TRV21E)	
55	X-3945-455-1	CABINET (L) ASSY	
57	3-736-807-01	BELT, GRIP	
71	3-942-895-01	STOPPER, BELT	
* 75	3-970-730-01	CUSHION, MA	

CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212			
Ref. No.	Part No.	Description	Remarks
51	X-3947-055-1	PANEL ASSY, FRONT (TRV10E/TRV12/TRV12E/TRV12PK)	
51	X-3947-096-1	PANEL ASSY, FRONT (TRV22)	
51	X-3947-148-1	PANEL ASSY, FRONT (TRV112)	
51	X-3947-163-1	PANEL ASSY, FRONT (TRV212)	
55	X-3947-013-1	CABINET (L) ASSY	
57	3-969-339-01	BELT, GRIP	
71		――――――	
* 75	3-970-730-02	CUSHION, MA	

3-1-2. CABINET (R) SECTION (SEE PAGE 5-3)

: Points changed parts.



107
125
110
106
not supplied
108
133
EVF SECTION (See Page 5-4)
128
105
109
111
110
110
114
106
not supplied
(127)
126
132
121
121
104
110
112
A
not supplied
121
A
113
115
116
103
not supplied
119
117
102
121
118
101
128
131
121
123
120
122
130
not supplied
(129)
124

CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK

Ref. No.	Part No.	Description	Remarks
101	3-968-914-01	COVER (FRONT), HINGE	
105	A-7092-828-A	CF-42 BOARD, COMPLETE (TRV11/TRV11E)	
105	A-7092-829-A	CF-42 BOARD, COMPLETE (TRV21:US, Canadian)	
105	A-7092-830-A	CF-42 BOARD, COMPLETE (TRV21:E, Tourist/TRV21E)	
107	X-3946-003-1	CABINET (R) ASSY (TRV11/TRV11E)	
107	X-3946-004-1	CABINET (R) ASSY (TRV21:US, Canadian)	
107	X-3946-005-1	CABINET (R) ASSY (TRV21:E, Tourist/TRV21E:E, Tourist)	
107	X-3946-226-1	CABINET (R) ASSY (TRV21E:AEP, UK)	
117	1-801-191-11	INDICATOR MODULE, LIQUID CRYST (TYPE A)	
117	1-801-289-11	INDICATOR MODULE, LIQUID CRYST (TYPE B)	
⚠118	1-517-524-11	TUBE, FLUORESCENT, COLD CATHODE (TYPE A)	
⚠118	1-517-524-21	TUBE, FLUORESCENT, COLD CATHODE (TYPE B)	
120	A-7072-499-A	PD-67 BOARD, COMPLETE (TRV11/TRV21) (TYPE A)	
120	A-7072-525-A	PD-67P BOARD, COMPLETE (TRV11E/TRV21E) (TYPE A)	
120	A-7072-858-A	PD-67 BOARD, COMPLETE (TRV11/TRV21) (TYPE B)	
120	A-7072-860-A	PD-67P BOARD, COMPLETE (TRV11E/TRV21E) (TYPE B)	
123	A-7072-500-A	SD-21 BOARD, COMPLETE (TRV11/TRV21) (TYPE A)	
123	A-7072-526-A	SD-21P BOARD, COMPLETE (TRV11E/TRV21E) (TYPE A)	
123	A-7072-859-A	SD-21 BOARD, COMPLETE (TRV11/TRV21) (TYPE B)	
123	A-7072-861-A	SD-21P BOARD, COMPLETE (TRV11E/TRV21E) (TYPE B)	
124	X-3946-007-1	CABINET (C) ASSY, P (TRV11E)	
124	X-3946-008-1	CABINET (C) ASSY, P (TRV21)	
124	X-3946-009-1	CABINET (C) ASSY, P (TRV11)	
124	X-3946-177-1	CABINET (C) ASSY, P (TRV21E)	
127	3-970-787-01	SHEET, HARNESS	
129	3-970-855-01	SHEET (2), LIGHTINTERCEPTION	

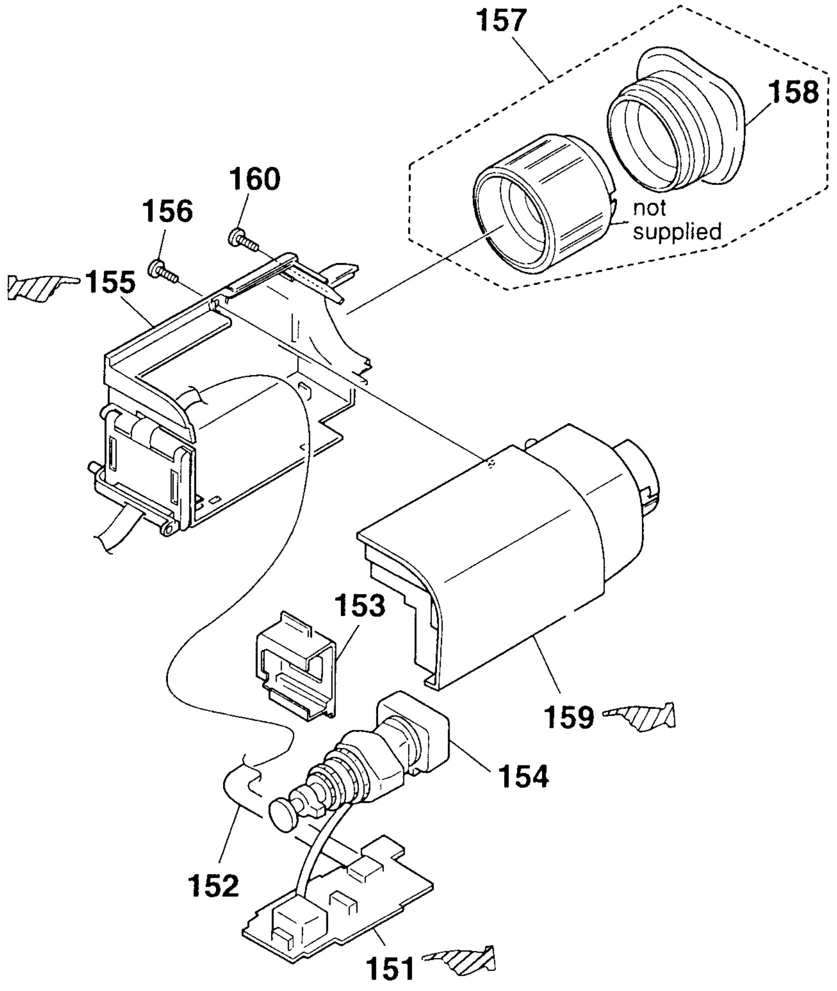
CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212

Ref. No.	Part No.	Description	Remarks
101	3-968-914-11	COVER (FRONT), HINGE (TRV112/TRV212)	
101	3-968-914-21	COVER (FRONT), HINGE (TRV10E/TRV12/TRV12E/TRV12PK/TRV22)	
105	A-7092-828-A	CF-42 BOARD, COMPLETE (TRV10E)	
105	A-7092-829-A	CF-42 BOARD, COMPLETE (TRV22/TRV212)	
105	A-7093-134-A	CF-42 BOARD, COMPLETE (TRV12:E, Hong kong, Tourist/TRV12E/TRV12PK)	
105	A-7093-169-A	CF-42 BOARD, COMPLETE (TRV12:US, Canadian/TRV112)	
107	X-3947-054-1	CABINET (R) ASSY (TRV12E)	
107	X-3947-094-1	CABINET (R) ASSY (TRV22)	
107	X-3947-130-1	CABINET (R) ASSY (TRV12)	
107	X-3947-139-1	CABINET (R) ASSY (TRV10E)	
107	X-3947-147-1	CABINET (R) ASSY (TRV112)	
107	X-3947-162-1	CABINET (R) ASSY (TRV212)	
107	X-3947-185-1	CABINET (R) ASSY (TRV12PK)	
117	1-801-289-21	INDICATOR MODULE, LIQUID CRYST (TYPE B)	
117	1-801-393-21	INDICATOR MODULE, LIQUID CRYST (TYPE A)	
⚠118	1-517-524-21	TUBE, FLUORESCENT, COLD CATHODE (TRV10E) (TYPE B)	
⚠118	1-517-524-41	TUBE, FLUORESCENT, COLD CATHODE (TRV10E) (TYPE A)	
⚠118	1-517-524-51	TUBE, FLUORESCENT, COLD CATHODE (TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212) (TYPE A)	
⚠118	1-517-524-61	TUBE, FLUORESCENT, COLD CATHODE (TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212) (TYPE B)	
120	A-7093-132-A	PD-67P BOARD, COMPLETE (TRV10E/TRV12E) (TYPE B)	
120	A-7093-133-A	PD-67P BOARD, COMPLETE (TRV10E/TRV12E) (TYPE A)	
120	A-7093-155-A	PD-67 BOARD, COMPLETE (TRV12/TRV12PK/TRV22/TRV112/TRV212) (TYPE B)	
120	A-7093-156-A	PD-67 BOARD, COMPLETE (TRV12/TRV12PK/TRV22/TRV112/TRV212) (TYPE A)	
123	A-7093-135-A	SD-21P BOARD, COMPLETE (TRV10E/TRV12E) (TYPE B)	
123	A-7093-136-A	SD-21P BOARD, COMPLETE (TRV10E/TRV12E) (TYPE A)	
123	A-7093-157-A	SD-21 BOARD, COMPLETE (TRV12/TRV12PK/TRV22/TRV112/TRV212) (TYPE B)	
123	A-7093-158-A	SD-21 BOARD, COMPLETE (TRV12/TRV12PK/TRV22/TRV112/TRV212) (TYPE A)	
124	X-3947-053-1	CABINET (C) ASSY, P (TRV12E)	
124	X-3947-095-1	CABINET (C) ASSY, P (TRV22)	
124	X-3947-131-1	CABINET (C) ASSY, P (TRV12/TRV12PK)	
124	X-3947-140-1	CABINET (C) ASSY, P (TRV10E)	
124	X-3947-149-1	CABINET (C) ASSY, P (TRV112)	
124	X-3947-164-1	CABINET (C) ASSY, P (TRV212)	
127	——— not supplied ———		
129	——— not supplied ———		

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

3-1-3. EVF SECTION (SEE PAGE 5-4)

☞: Points changed parts.

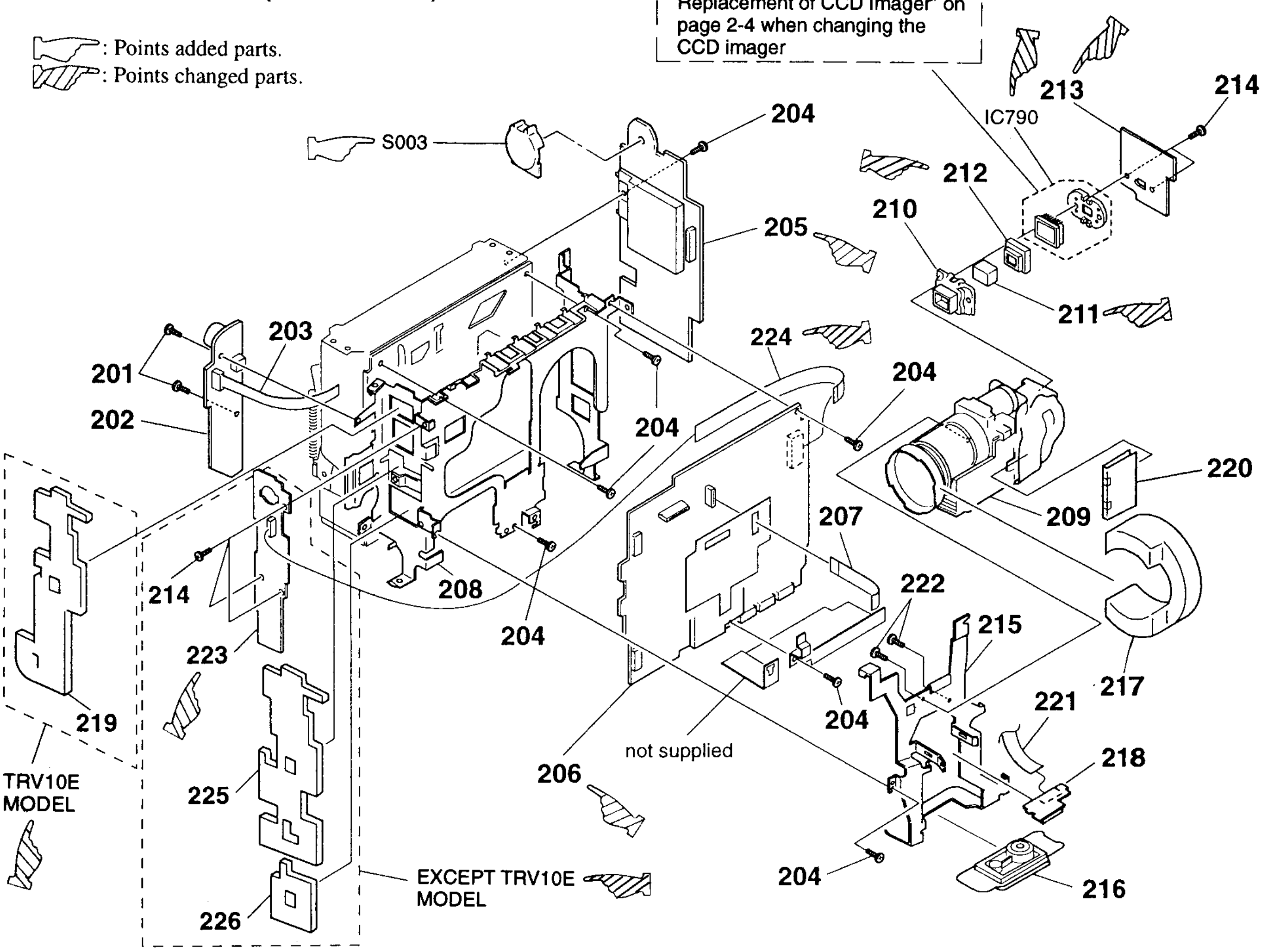


CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK				CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212			
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
151	A-7072-357-A	VF-102P BOARD, COMPLETE (TRV11E/TRV21E)		151	A-7072-357-A	VF-102P BOARD, COMPLETE (TRV10E/TRV12E)	
151	A-7072-362-A	VF-102 BOARD, COMPLETE (TRV11/TRV21)		151	A-7072-362-A	VF-102 BOARD, COMPLETE (TRV12/TRV12PK/TRV22/TRV112/TRV212)	
155	X-3945-947-1	CABINET (L) ASSY, EVF		155	X-3945-947-1	CABINET (L) ASSY, EVF (TRV112/TRV212)	
				155	X-3945-056-1	CABINET (L) ASSY, EVF (TRV10E/TRV12/TRV12ETRV12PK/TRV22)	
159	3-968-916-01	CABINET (R), EVF		159	3-968-916-01	CABINET (R), EVF (TRV112)	
				159	3-968-916-11	CABINET (R), EVF (TRV212)	
				159	3-968-916-21	CABINET (R), EVF (TRV10E/TRV12/TRV12E/TRV12PK/TRV22)	

3-1-4. MAIN SECTION (SEE PAGE 5-5)

: Points added parts.
: Points changed parts.

* Be sure to read "Precautions for Replacement of CCD Imager" on page 2-4 when changing the CCD imager

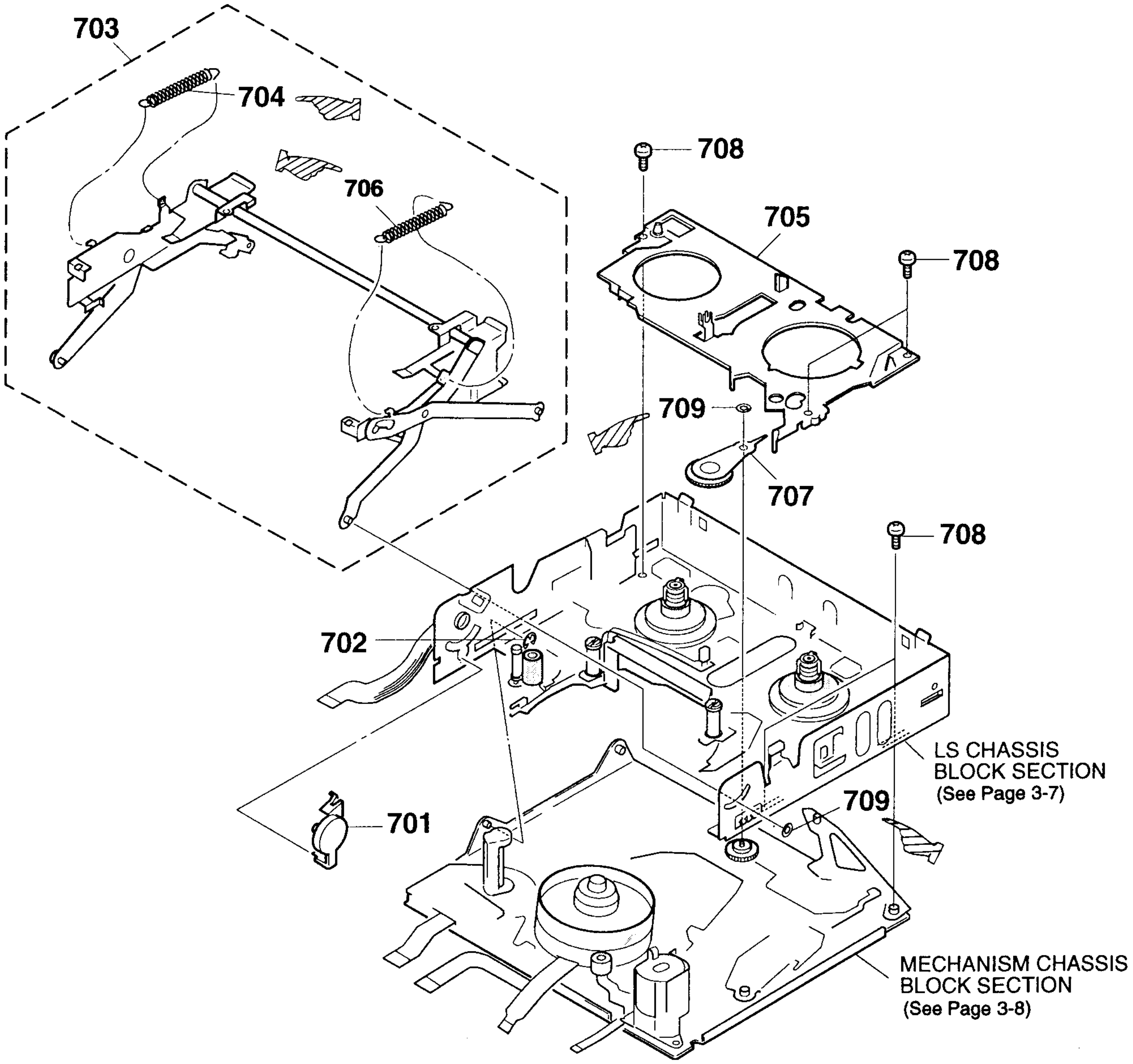


CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK			
Ref. No.	Part No.	Description	Remarks
205	A-7072-821-A	DD-80 BOARD, COMPLETE (TRV11/TRV21)	
205	A-7092-822-A	DD-80P BOARD, COMPLETE (TRV11E/TRV21E)	
206	A-7092-817-A	VC-167 BOARD, COMPLETE (TRV11)	
206	A-7092-818-A	VC-167P BOARD, COMPLETE (TRV11E)	
206	A-7092-819-A	VC-167 BOARD, COMPLETE (TRV21)	
206	A-7092-820-A	VC-167P BOARD, COMPLETE (TRV21E)	
211	1-547-558-21	FILTER BLOCK, OPTICAL (TRV11/TRV11E)	
211	1-547-735-51	FILTER BLOCK, OPTICAL (TRV21/TRV21E)	
212	3-946-857-01	RUBBER (S), SEAL (TRV11/TRV11E)	
212	3-960-149-01	RUBBER (3), SEAL (TRV21/TRV21E)	
213	A-7072-494-A	CD-147 BOARD, COMPLETE (TRV11/TRV11E)	
213	A-7072-596-A	CD-147 BOARD, COMPLETE (TRV21/TRV21E)	
* 219	3-970-735-02	CUSHION, MD (TRV11/TRV11E)	
223	A-7072-504-A	TZ-5 BOARD, COMPLETE (TRV21/TRV21E)	
224	1-660-435-11	FP-402 FLEXIBLE BOARD (TRV21/TRV21E)	
* 225	3-970-737-01	CUSHION, (A), TZ (TRV21/TRV21E)	
* 226	3-970-738-01	CUSHION, (B), TZ (TRV21/TRV21E)	
IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-11) (CCD IMAGER) (TRV11)	
IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11) (CCD IMAGER) (TRV11E)	
IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41) (CCD IMAGER) (TRV21)	
IC790	A-7030-495-A	CCD BLOCK ASSY (ICX-060AK-41) (CCD IMAGER) (TRV21E)	

CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212			
Ref. No.	Part No.	Description	Remarks
205	A-7093-137-A	DD-80P BOARD, COMPLETE (TRV10E/TRV12E)	
205	A-7093-154-A	DD-80 BOARD, COMPLETE (TRV12/TRV12PK/TRV22/TRV112/TRV212)	
206	A-7093-110-A	VC-167P BOARD, COMPLETE (TRV10E)	
206	A-7093-131-A	VC-167P BOARD, COMPLETE (TRV12E)	
206	A-7093-159-A	VC-167 BOARD, COMPLETE (TRV22/TRV212)	
206	A-7093-168-A	VC-167 BOARD, COMPLETE (TRV12/TRV12PK/TRV112)	
211	1-547-558-11	FILTER BLOCK, OPTICAL (TRV11/TRV11E) (TRV10E/TRV12/TRV12E/TRV12PK/TRV112)	
211	1-547-735-51	FILTER BLOCK, OPTICAL (TRV22/TRV212)	
212	3-946-857-01	RUBBER (S), SEAL (TRV10E/TRV12/TRV12E/TRV12PK/TRV112)	
212	3-960-149-01	RUBBER (3), SEAL (TRV22/TRV212)	
213	A-7072-494-A	CD-147 BOARD, COMPLETE (TRV10E/TRV12/TRV12E/TRV12PK/TRV112)	
213	A-7072-596-A	CD-147 BOARD, COMPLETE (TRV22/TRV212)	
* 219	3-970-735-02	CUSHION, MD (TRV10E)	
223	A-7072-992-A	TZ-5 BOARD, COMPLETE (TRV12/TRV12E/TRV12PK/TRV112)	
223	A-7072-998-A	TZ-5 BOARD, COMPLETE (TRV22/TRV212)	
224	1-660-435-11	FP-402 FLEXIBLE BOARD (EXCEPT TRV10E)	
225	3-970-737-01	CUSHION, (A), TZ (EXCEPT TRV10E)	
226	3-970-738-01	CUSHION, (B), TZ (EXCEPT TRV10E)	
IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-11) (CCD IMAGER) (TRV12/TRV12PK/TRV112)	
IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11) (CCD IMAGER) (TRV10E/TRV12E)	
IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41) (CCD IMAGER) (TRV22/TRV212)	
S003	1-762-622-11	SWITCH, ROTARY (ZOOM SW)	

3-1-5. CASSETTE COMPARTMENT BLOCK SECTION (SEE PAGE 5-6)

▨:Points changed parts.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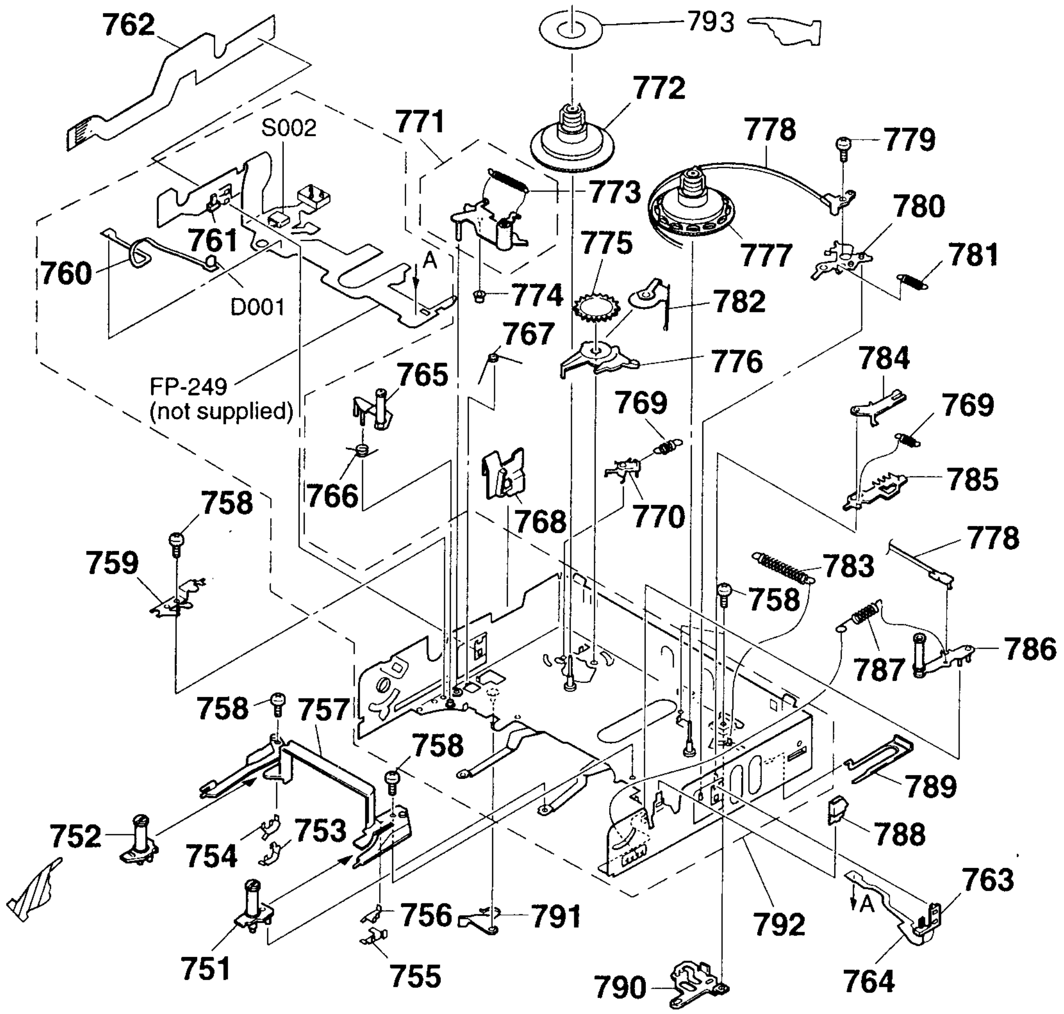
LS CHASSIS
BLOCK SECTION
(See Page 3-7)
MECHANISM CHASSIS
BLOCK SECTION
(See Page 3-8)

CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK			
Ref. No.	Part No.	Description	Remarks
704	3-965-587-01	SPRING, TENSION	
709	3-331-007-21	WASHER	

CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212			
Ref. No.	Part No.	Description	Remarks
704	3-965-587-03	SPRING, TENSION	
706	3-973-268-01	SPRING, TENSION	
709	3-727-176-01	WASHER, STOPPER	

3-1-6. LS CHASSIS BLOCK SECTION (SEE PAGE 5-7)

☞ : Points added parts.
▨ : Points changed parts.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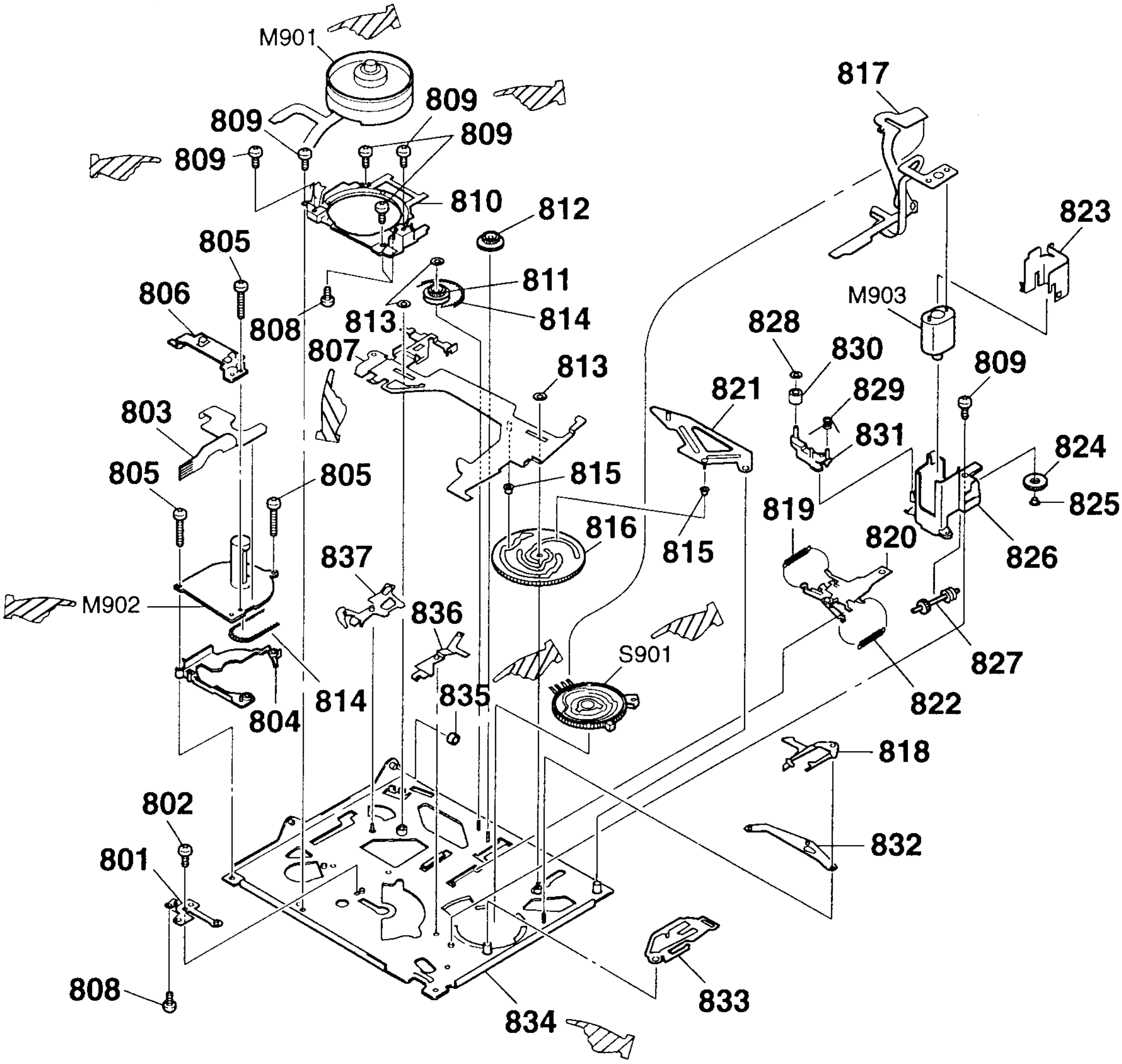
CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK				CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212			
Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
752	A-7040-418-A	BASE (T) BLOCK ASSY, GUIDE		752	A-7040-418-B	BASE (T) BLOCK ASSY, GUIDE	
				* 793	3-972-838-01	SPACER, REEL	

3-1-7. MACHANISM CHASSIS BLOCK SECTION (SEE PAGE 5-8)

☞: Points changed parts.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CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK			
Ref. No.	Part No.	Description	Remarks
807	X-3945-387-1	SLIDER ASSY, M	
834	X-3945-386-1	CHASSIS ASSY, MECHANICAL	
835	3-965-526-01	ROLLER, LS GUIDE	
838	3-966-819-01	SCREW +P1.4X3	
M901	A-7048-806-A	DRUM BLOCK ASSY (DGH-0C2A-R) (TRV11E/TRV21E)	
M901	A-7048-804-A	DRUM BLOCK ASSY (DGH-0C1A-R) (TRV11/TRV21)	
M902	8-835-531-02	MOTOR, DC SCE-0601A (CAPSTAN)	
S901	1-762-436-11	SWITCH, ROTARY (ENCODER)	

CCD-TRV10E/TRV12/TRV12E/TRV12PK/TRV22/TRV112/TRV212			
Ref. No.	Part No.	Description	Remarks
807	3-971-644-01	SLIDER (2), M	
834	X-3946-548-2	CHASSIS ASSY, MECHANICAL	
835	3-965-526-02	ROLLER, LS GUIDE	
838	————————		
M901	A-7048-810-A	DRUM BLOCK ASSY (DGH-0C4A-R) (TRV10E/TRV12E)	
M901	A-7048-831-A	DRUM BLOCK ASSY (DGH-0D1A-R) (TRV12/TRV12PK/TRV22/TRV112/TRV212)	
M902	8-835-531-32	CAPSTAN ASSY	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

3-2. ELECTRICAL PARTS LIST

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

CD-147 **CF-42**

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

- PAGE no mark: Pages on the original service manual.
  PAGE ( ): Pages on the supplement-1.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-9		A-7072-494-A	CD-147 BOARD, COMPLETE	(TRV11/TRV11E)		A-7072-494-A	CD-147 BOARD, COMPLETE	(TRV10E/TRV12/TRV12E)
		A-7072-596-A	CD-147 BOARD, COMPLETE	(TRV21/TRV21E)		A-7072-596-A	CD-147 BOARD, COMPLETE	(TRV22)
	C795	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TRV11/TRV11E)	C795	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TRV10E/TRV12/TRV12E)
	IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-11) (CCD IMAGER)	(TRV11)	IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-12) (CCD IMAGER)	(TRV12)
	IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11) (CCD IMAGER)	(TRV11E)	IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-12) (CCD IMAGER)	(TRV10E/TRV12E)
	IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41) (CCD IMAGER)	(TRV21)	IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-42) (CCD IMAGER)	(TRV22)
	R791	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TRV11/TRV11E)	R791	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TRV10E/TRV12/TRV12E)
	R791	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV21/TRV21E)	R791	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV22)
	R792	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11/TRV11E)	R792	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV10E/TRV12/TRV12E)
	R792	1-216-820-11	METAL CHIP 820 5% 1/16W	(TRV21/TRV21E)	R792	1-216-820-11	METAL CHIP 820 5% 1/16W	(TRV22)
	R793	1-216-849-11	METAL CHIP 220K 5% 1/16W	(TRV11/TRV11E)	R793	1-216-849-11	METAL CHIP 220K 5% 1/16W	(TRV10E/TRV12/TRV12E)
	R793	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	(TRV21/TRV21E)	R793	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	(TRV22)
5-9		A-7092-830-A	CF-42 BOARD, COMPLETE	(TRV21:E, Tourist/TRV21E)		A-7092-828-A	CF-42 BOARD, COMPLETE	(TRV10E)
		A-7092-828-A	CF-42 BOARD, COMPLETE	(TRV11/TRV11E)		A-7092-829-A	CF-42 BOARD, COMPLETE	(TRV22)
		A-7092-829-A	CF-42 BOARD, COMPLETE	(TRV21:US, Canadian)		A-7093-134-A	CF-42 BOARD, COMPLETE	(TRV12:E, HongKong/TRV12E)
						A-7093-169-A	CF-42 BOARD, COMPLETE	(TRV12:US, Canadian)
			————			3-831-441-XX	CUSHION (5)	(TRV10E/TRV22)
5-10	C313	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV21/TRV21E)	C313	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV12/TRV12E/TRV22)
	C314	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	(TRV21/TRV21E)	C314	1-135-091-91	TANTAL. CHIP 1uF 20% 16V	(TRV12/TRV12E/TRV22)
	C325	1-104-850-11	TANTAL. CHIP 6.8uF 20% 10V		C325		————	
	D302	8-719-052-33	DIODE MAZV082DFL		D302		————	
	D303	8-719-420-14	DIODE MA8082-M		D303		————	
	D304	8-719-420-14	DIODE MA8082-M		D304		————	
	D305	8-719-052-33	DIODE MAZV082DFL		D305		————	
	D306	8-719-420-14	DIODE MA8082-M		D306		————	
	D310	8-719-039-XX	DIODE UMZ8.2T-T106		D310	8-719-039-99	DIODE UMZ8.2T-T106	
	D312	8-719-420-14	DIODE MA8082-M		D312		————	
	D314	8-719-404-49	DIODE MA111	(TRV21/TRV21E)	D314	8-719-404-49	DIODE MA111	(TRV12/TRV12E/TRV22)
	D315	8-719-404-49	DIODE MA111	(TRV21/TRV21E)	D315	8-719-404-49	DIODE MA111	(TRV12/TRV12E/TRV22)
	D319	8-719-420-14	DIODE MA8082-M		D319		————	
	D320	8-719-420-14	DIODE MA8082-M		D320		————	

CF-42

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-10	D325	8-719-420-14	DIODE MA8082-M	(TRV21/TRV21E)	D325		—	
	D326	8-719-420-14	DIODE MA8082-M		D326		—	
	D335	8-719-420-14	DIODE MA8082-M		D335		—	
	D336	8-719-052-33	DIODE MAZV082DFL		D336	8-719-059-57	DIODE MAZJ082DFLSO	
5-11	L303	1-216-295-91	CONDUCTOR, CHIP (2012)	(TRV11/TRV11E)	L303		—	
	L303	1-414-235-11	INDUCTOR, FERRITE BEAD	(TRV21/TRV21E)	L303		—	
	L305	1-216-295-91	CONDUCTOR, CHIP (2012)		L305		—	
	Q301	8-729-823-16	TRANSISTOR 2SC4555-5. 6. 7	(TRV21/TRV21E)	Q301	8-729-823-16	TRANSISTOR 2SC4555-5. 6. 7	(TRV12/TRV12E/TRV22)
	Q302	8-729-032-00	TRANSISTOR 2SJ381-TD	(TRV21/TRV21E)	Q302	8-729-032-00	TRANSISTOR 2SJ381-TD	(TRV12/TRV12E/TRV22)
	Q303	8-729-402-81	TRANSISTOR XN4501	(TRV21/TRV21E)	Q303	8-729-402-81	TRANSISTOR XN4501	(TRV12/TRV12E/TRV22)
	Q304	8-729-015-76	TRANSISTOR UN5211	(TRV21/TRV21E)	Q304	8-729-015-76	TRANSISTOR UN5211	(TRV12/TRV12E/TRV22)
	Q317	8-729-420-24	TRANSISTOR 2SB1218A-QRS		Q317		—	
	R314	1-216-821-11	METAL CHIP 1K 5% 1/16W		R314		—	
	R315	1-216-821-11	METAL CHIP 1K 5% 1/16W		R315		—	
	R316	1-216-821-11	METAL CHIP 1K 5% 1/16W		R316		—	
	R320		—		R320	1-216-295-91	CONDUCTOR, CHIP (2012)	
	R321	1-216-821-11	METAL CHIP 1K 5% 1/16W		R321		—	
	R322	1-216-821-11	METAL CHIP 1K 5% 1/16W		R322	1-216-295-91	CONDUCTOR, CHIP (2012)	(TRV10E)
					R322	1-414-235-11	INDUCTOR, FERRITE BEAD	(TRV12/TRV12E/TRV22)
	R323	1-216-833-11	METAL CHIP 10K 5% 1/16W		R323		—	
	R332	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E)	R332	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E)
	R336	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV21/TRV21E)	R336	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12/TRV12E/TRV22)
	R337	1-216-825-11	METAL CHIP 2. 2K 5% 1/16W	(TRV21/TRV21E)	R337	1-216-825-11	METAL CHIP 2. 2K 5% 1/16W	(TRV12/TRV12E/TRV22)
	R338	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TRV21/TRV21E)	R338	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TRV12/TRV12E/TRV22)
	R346	1-216-821-11	METAL CHIP 1K 5% 1/16W		R346		—	
	R360	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV21:US, Canadian)	R360	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV12:E, Hong kong/TRV12E/TRV22)
	R361	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV21:US, Canadian)	R361	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV12:E, Hong kong/TRV12E/TRV22)
	R365	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV21:E, Tourist/TRV21E)	R365	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV12:E, Hong kong/TRV12E)
	R380	1-216-821-11	METAL CHIP 1K 5% 1/16W		R380		—	
5-12	R381	1-216-821-11	METAL CHIP 1K 5% 1/16W		R381		—	
	R395	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV21/TRV21E)	R395	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12:E, Hong Kong/TRV12E/TRV22)
	R396	1-216-833-11	METAL CHIP 10K 5% 1/16W		R396		—	
	R493	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E)	R493	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E)
	R493	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV21/TRV21E)	R493	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV12/TRV12E/TRV22)

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le neméro spécifié.

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-12	R494	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E/TRV21:US, Canadian)	R494	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV22)
	R494	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV21:E, Tourist/TRV21E)	R494	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV12/TRV12E)
	R495	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E/TRV21:US, Canadian)	R495	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV22)
	R495	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV21:E, Tourist/TRV21E)	R495	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV10E/TRV12E)
	R496	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E/TRV21:US, Canadian)	R496	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV22)
	R496	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV21:E, Tourist/TRV21E)	R496	1-414-385-11	INDUCTOR, FERRITE BEAD	(TRV12/TRV12E)
	S300	1-553-977-00	SWITCH, SLIDE	(TRV21/TRV21E)	S300	1-553-977-00	SWITCH, SLIDE	(TRV12/TRV12E/TRV22) (D-ZOOM)
	S486	1-570-397-11	SWITCH, SLIDE	(TRV21:US, Canadian)	S486	1-570-397-11	SWITCH, SLIDE	(TRV22) (STEADY SHOT)
					S486	1-570-397-11	SWITCH, SLIDE	(TRV12:E, Hong Kong/TRV12E) (WIDE)
5-13		A-7072-821-A	DD-80 BOARD, COMPLETE	(TRV11/TRV21)		A-7093-154-A	DD-80 BOARD, COMPLETE	(TRV12/TRV22)
		A-7092-822-A	DD-80P BOARD, COMPLETE	(TRV11E/TRV21E)		A-7093-137-A	DD-80P BOARD, COMPLETE	(TRV10E/TRV12E)
	C031	1-115-170-11	TANTALUM 4.7uF 20% 10V	(TRV11/TRV21)	C031	1-115-170-11	TANTALUM 4.7uF 20% 10V	
	D002	8-719-420-14	DIODE MA8082-M		D002	——		
	⚠F001	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)	⚠F001	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV12/TRV22)
	⚠F002	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)	⚠F002	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV12/TRV22)
	⚠F003	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)	⚠F003	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV12/TRV22)
	⚠F004	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)	⚠F004	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV12/TRV22)
	⚠PS001	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)	⚠PS001	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV10E/TRV12E)
	⚠PS002	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)	⚠PS002	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV10E/TRV12E)
	⚠PS003	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)	⚠PS003	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV10E/TRV12E)
	⚠PS004	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)	⚠PS004	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV10E/TRV12E)
5-14	S003	1-762-441-11	SWITCH, ROTARY (ZOOM SW)		S003	——TO MISCELLANEOUS——		
5-14		A-7072-493-A	JK-146 BOARD, COMPLETE			A-7072-493-A	JK-146 BOARD, COMPLETE	
	D060	8-719-027-50	DIODE MA142WK		D060	8-719-059-51	DIODE MA3J142E0LS0	
	D061	8-719-027-50	DIODE MA142WK		D061	8-719-059-51	DIODE MA3J142E0LS0	
5-15		A-7072-497-A	MA-266 BOARD, COMPLETE			A-7072-497-A	MA-266 BOARD, COMPLETE	
	D951	8-719-027-50	DIODE MA142WK-(TX)		D951	8-719-059-51	DIODE MA3J142E0LS0	
	D952	8-719-027-50	DIODE MA142WK-(TX)		D952	8-719-059-51	DIODE MA3J142E0LS0	
	L952	1-414-235-11	INDUCTOR, FERRITE BEAD		L952	1-412-939-11	INDUCTOR 1uH	
	L953	1-414-235-11	INDUCTOR, FERRITE BEAD		L953	1-412-939-11	INDUCTOR 1uH	

PD-67 **SD-21**

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-15	TYPE A	A-7072-499-A	PD-67 BOARD, COMPLETE	(TRV11/TRV21)	TYPE A	A-7093-156-A	PD-67 BOARD, COMPLETE	(TRV12/TRV22)
	TYPE A	A-7072-525-A	PD-67P BOARD, COMPLETE	(TRV11E/TRV21E)	TYPE A	A-7093-133-A	PD-67P BOARD, COMPLETE	(TRV10E/TRV12E)
5-16	L503	1-412-032-11	INDUCTOR CHIP 100uH		L503	1-412-963-11	INDUCTOR CHIP 100uH	
	L504	1-412-032-11	INDUCTOR CHIP 100uH		L504	1-412-963-11	INDUCTOR CHIP 100uH	
	L505	1-412-032-11	INDUCTOR CHIP 100uH		L505	1-412-963-11	INDUCTOR CHIP 100uH	
	R306	1-216-838-11	METAL CHIP 27K 5% 1/16W		R306	1-216-839-11	METAL CHIP 33K 5% 1/16W	
	R307	1-216-839-11	METAL CHIP 33K 5% 1/16W		R307	1-216-840-11	METAL CHIP 39K 5% 1/16W	
5-17	R320	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV21)	R320	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV12/TRV22)
	R326	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11E/TRV21E)	R326	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV12E)
	R332	1-216-833-11	METAL CHIP 10K 5% 1/16W		R332		————	
	R334	1-216-844-11	METAL CHIP 82K 5% 1/16W	(TRV11/TRV21)	R334	1-216-844-11	METAL CHIP 82K 5% 1/16W	(TRV12/TRV22)
	R334	1-216-849-11	METAL CHIP 220K 5% 1/16W	(TRV11E/TRV21E)	R334	1-216-849-11	METAL CHIP 220K 5% 1/16W	(TRV10E/TRV12E)
	R343	1-216-843-11	METAL CHIP 68K 5% 1/16W		R343	1-216-842-11	METAL CHIP 56K 5% 1/16W	
	R345	1-216-864-11	METAL CHIP 0 5% 1/16W		R345		————	
	R346	1-216-864-11	METAL CHIP 0 5% 1/16W		R346		————	
	R347	1-216-864-11	METAL CHIP 0 5% 1/16W		R347		————	
	R539	1-216-864-11	METAL CHIP 0 5% 1/16W		R539		————	
(17)	TYPE B	A-7072-858-A	PD-67 BOARD, COMPLETE	(TRV11/TRV21)	TYPE B	A-7093-155-A	PD-67 BOARD, COMPLETE	(TRV12/TRV22)
	TYPE B	A-7072-860-A	PD-67P BOARD, COMPLETE	(TRV11E/TRV21E)	TYPE B	A-7093-132-A	PD-67P BOARD, COMPLETE	(TRV10E/TRV12E)
	C322	1-135-212-21	TANTAL. CHIP 2.2uF 20% 25V	(TRV11/TRV21)	C322	1-135-212-21	TANTAL. CHIP 2.2uF 20% 25V	(TRV12/TRV22)
	C322	1-104-916-11	TANTAL. CHIP 6.8uF 20% 20V	(TRV11E/TRV21E)	C322	1-104-916-11	TANTAL. CHIP 6.8uF 20% 20V	(TRV10E/TRV12E)
	CN302	1-766-346-21	CONNECTOR, FFC/FPC 16P		CN302	1-766-677-21	CONNECTOR, FFC/FPC 16P	
(18)	R306	1-216-835-11	METAL CHIP 15K 5% 1/16W		R306	1-216-836-11	METAL CHIP 18K 5% 1/16W	
	R307	1-216-838-11	METAL CHIP 27K 5% 1/16W		R307	1-216-839-11	METAL CHIP 33K 5% 1/16W	
	R322	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11/TRV21)	R322	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12/TRV22)
	R323	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)	R323	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV10E/TRV12E)
5-18	TYPE A	A-7072-500-A	SD-21 BOARD, COMPLETE	(TRV11/TRV21)	TYPE A	A-7093-158-A	SD-21 BOARD, COMPLETE	(TRV12/TRV22)
	TYPE A	A-7072-526-A	SD-21P BOARD, COMPLETE	(TRV11E/TRV21E)	TYPE A	A-7093-136-A	SD-21P BOARD, COMPLETE	(TRV10E/TRV12E)
	C114	1-216-864-11	METAL CHIP 0 5% 1/16W		C114		————	
	C121	1-164-471-11	CERAMIC CHIP 680PF 5% 50V	(TRV11E/TRV21E)	C121	1-164-471-11	CERAMIC CHIP 680PF 5% 50V	(TRV10E/TRV12E)
	C125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C129	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C129	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-18	C130	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	(TRV11E/TRV21E)	C130	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	(TRV10E/TRV12E)
	D101	8-713-102-80	DIODE 1T369-01-T8A	(TRV11E/TRV21E)	D101	8-713-102-80	DIODE 1T369-01-T8A	(TRV10E/TRV12E)
	L103	1-412-956-21	INDUCTOR 27uH	(TRV11E/TRV21E)	L103	1-412-956-21	INDUCTOR 27uH	(TRV10E/TRV12E)
	Q102	8-729-230-63	TRANSISTOR 2SC4116-YG	(TRV11E/TRV21E)	Q102	8-729-230-63	TRANSISTOR 2SC4116-YG	(TRV10E/TRV12E)
	R118	1-216-864-11	METAL CHIP 0 5% 1/16W		R118		――――――	
	R120	1-216-864-11	METAL CHIP 0 5% 1/16W		R120		――――――	
	R122	1-216-843-11	METAL CHIP 68K 5% 1/16W		R122		――――――	
	R123	1-216-864-11	METAL CHIP 0 5% 1/16W		R123		――――――	
	R125	1-216-851-11	METAL CHIP 330K 5% 1/16W		R125		――――――	
	R128	1-216-841-11	METAL CHIP 47K 5% 1/16W		R128	1-216-837-11	METAL CHIP 22K 5% 1/16W	
	R129	1-216-841-11	METAL CHIP 47K 5% 1/16W		R129	1-216-842-11	METAL CHIP 56K 5% 1/16W	
	R132	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	(TRV11E/TRV21E)	R132	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	(TRV10E/TRV12E)
	R134	1-216-840-11	METAL CHIP 39K 5% 1/16W		R134	1-216-841-11	METAL CHIP 47K 5% 1/16W	
	R136	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV11E/TRV21E)	R136	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV10E/TRV12E)
	R141	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TRV11E/TRV21E)	R141	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TRV10E/TRV12E)
	R142	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV11E/TRV21E)	R142	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV10E/TRV12E)
	R145	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV11/TRV21)	R145	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV12/TRV22)
	R145	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11E/TRV21E)	R145	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV10E/TRV12E)
5-19	R146	1-216-844-11	METAL CHIP 82K 5% 1/16W	(TRV11/TRV21)	R146	1-216-844-11	METAL CHIP 82K 5% 1/16W	(TRV12/TRV22)
	R146	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11E/TRV21E)	R146	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV12E)
	R147	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV11E/TRV21E)	R147	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV10E/TRV12E)
	R149	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV11E/TRV21E)	R149	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV10E/TRV12E)
	R150	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV11E/TRV21E)	R150	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV10E/TRV12E)
	R154	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV11E/TRV21E)	R154	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV10E/TRV12E)
	R155	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV11/TRV21)	R155	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV12/TRV22)
	R156	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11/TRV21)	R156	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12/TRV22)

SD-21

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-19	X101	1-579-466-11	VIBRATOR, CRYSTAL(3.58MHz)	(TRV11/TRV21)	X101	1-579-466-11	VIBRATOR, CRYSTAL(3.58MHz)	(TRV12/TRV22)
	X101	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	(TRV11E/TRV21E)	X101	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	(TRV10E/TRV12E)
(19)	TYPE B	A-7072-859-A	SD-21 BOARD, COMPLETE	(TRV11/TRV21)	TYPE B	A-7093-157-A	SD-21 BOARD, COMPLETE	(TRV12/TRV22)
	TYPE B	A-7072-861-A	SD-21P BOARD, COMPLETE	(TRV11E/TRV21E)	TYPE B	A-7093-135-A	SD-21P BOARD, COMPLETE	(TRV10E/TRV12E)
	C106		————		C106	1-162-924-11	CERAMIC CHIP 56PF 5% 50V	(TRV12/TRV22)
					C106	1-162-923-11	CERAMIC CHIP 47PF 5% 50V	(TRV10E/TRV12E)
	C117	1-135-180-21	TANTALUM CHIP 3.3uF 20% 6.3V		C117	1-104-912-11	TANTALUM CHIP 3.3uF 20% 6.3V	
	C121	1-164-471-11	CERAMIC CHIP 680PF 5% 50V	(TRV11E/TRV21E)	C121	1-164-471-11	CERAMIC CHIP 680PF 5% 50V	(TRV10E/TRV12E)
	C124	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C124	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C129	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C129	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C131	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TRV11E/TRV21E)	C131	1-162-922-11	CERAMIC CHIP 39PF 5% 50V	(TRV10E/TRV12E)
(20)	C136	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	(TRV11/TRV21)	C136	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	(TRV12/TRV22)
	C136	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TRV11E/TRV21E)	C136	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TRV10E/TRV12E)
	C137	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	(TRV11/TRV21)	C137	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	(TRV12/TRV22)
	C137	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TRV11E/TRV21E)	C137	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TRV10E/TRV12E)
	C138	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	(TRV11/TRV21)	C138	1-163-077-00	CERAMIC CHIP 0.1uF 10% 25V	(TRV12/TRV22)
	C138	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TRV11E/TRV21E)	C138	1-162-568-11	CERAMIC CHIP 0.33uF 10% 16V	(TRV10E/TRV22E)
	CN101	1-766-346-21	CONNECTOR, FFC/FPC 16P		CN101	1-766-677-21	CONNECTOR, FFC/FPC 16P	
	D102	8-713-102-80	DIODE 1T369-01-T8A	(TRV11E/TRV21E)	D102	8-713-102-80	DIODE 1T369-01-T8A	(TRV10E/TRV12E)
	L103		————		L103	1-412-962-11	INDUCTOR 82uH	
	L104	1-412-956-21	INDUCTOR 27uH	(TRV11E/TRV21E)	L104	1-412-956-21	INDUCTOR 27uH	(TRV10E/TRV12E)
	Q104	8-729-230-63	TRANSISTOR 2SC4116-YG		Q104	8-729-230-63	TRANSISTOR 2SC4116-YG	(TRV10E/TRV12E)
	R121	1-216-855-11	METAL CHIP 680K 5% 1/16W		R121		————	
	R129	1-216-851-11	METAL CHIP 330K 5% 1/16W		R129		————	
	R131	1-216 833-11	METAL CHIP 10K 5% 1/16W		R131	1-216-820-11	METAL CHIP 820 5% 1/16W	

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
(20)	R132	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	(TRV11E/TRV21E)	R132	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	(TRV10E/TRV12E)
	R133	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV11E/TRV21E)	R133	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV10E/TRV12E)
	R134	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV11E/TRV21E)	R134	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV10E/TRV12E)
	R138	1-218-889-11	METAL CHIP 56K 0.50% 1/16W		R138	1-218-890-11	METAL CHIP 68K 0.5% 1/16W	
	R139	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV11E/TRV21E)	R139	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV10E/TRV12E)
	R142	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TRV11E/TRV21E)	R142	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TRV10E/TRV12E)
	R146	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV11/TRV21)	R146	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV12/TRV22)
	R146	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11E/TRV21E)	R146	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV10E/TRV12E)
	R147	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV11E/TRV21E)	R147	1-216-841-11	METAL CHIP 47K 5% 1/16W	(TRV10E/TRV12E)
	R149	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV11E/TRV21E)	R149	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV10E/TRV12E)
	R153		————		R153	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12/TRV22)
	R155	1-216-840-11	METAL CHIP 39K 5% 1/16W		R155	1-216-843-11	METAL CHIP 68K 5% 1/16W	
	R156	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV11/TRV21)	R156	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV12/TRV22)
	R157	1-216-843-11	METAL CHIP 68K 5% 1/16W	(TRV11/TRV21)	R157	1-216-843-11	METAL CHIP 68K 5% 1/16W	(TRV12/TRV22)
	R157	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11E/TRV21E)	R157	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV12E)
	X101	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	(TRV11E/TRV21E)	X101	1-579-661-21	OSCILLATOR, CRYSTAL (4.43MHz)	(TRV10E/TRV12E)
	X101	1-579-466-11	VIBRATOR, CRYSTAL (3.58MHz)	(TRV11/TRV21)	X101	1-579-466-11	VIBRATOR, CRYSTAL (3.58MHz)	(TRV12/TRV22)
5-19		A-7072-504-A	TZ-5 BOARD, COMPLETE	(TRV21/TRV21E)		A-7072-992-A A-7072-998-A	TZ-5 BOARD, COMPLETE TZ-5 BOARD, COMPLETE	(TRV12/TRV12E) (TRV22)
	C650	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		C650	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TRV22)
	C651	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V		C651	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	(TRV22)
	C652	1-104-908-11	TANTAL. CHIP 47uF 20% 4V		C652	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	(TRV22)
	C653	1-104-908-11	TANTAL. CHIP 47uF 20% 4V		C653	1-104-908-11	TANTAL. CHIP 47uF 20% 4V	(TRV22)
	C654	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V		C654	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TRV22)
	C655	1-164-156-11	CERAMIC CHIP 0.1uF 25V		C655	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV22)
	C656	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V		C656	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	(TRV22)
	C657	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V		C657	1-164-299-11	CERAMIC CHIP 0.22uF 10% 25V	(TRV22)
	C658	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V		C658	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TRV22)
	C659	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V		C659	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	(TRV22)
	C660	1-128-257-21	ELECT CHIP 33uF 20% 10V		C660	1-128-257-21	ELECT CHIP 33uF 20% 10V	(TRV22)
	C661	1-128-257-21	ELECT CHIP 33uF 20% 10V		C661	1-128-257-21	ELECT CHIP 33uF 20% 10V	(TRV22)

TZ-5

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-19	C663	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	C663	1-162-927-11	CERAMIC CHIP 100PF 5%	50V(TRV22)
	C664	1-162-927-11	CERAMIC CHIP 100PF 5%	50V	C664	1-162-927-11	CERAMIC CHIP 100PF 5%	50V(TRV22)
	C665	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V	C665	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V(TRV22)
	C666	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V	C666	1-110-501-11	CERAMIC CHIP 0.33uF 10%	16V(TRV22)
	C668	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C668	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V(TRV22)
	C669	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C669	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V(TRV22)
	C672	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C672	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	C673	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C673	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	C674	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V	C674	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
	C675	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V	C675	1-135-259-11	TANTAL. CHIP 10uF 20%	6.3V
	CN650	1-764-526-11	CONNECTOR, FFC/FPC (ZIF) 18P		CN650	1-764-526-11	CONNECTOR, FFC/FPC (ZIF) 18P	
	IC650	8-759-080-34	IC TA75W01FU-TE12R		IC650	8-759-080-34	IC TA75W01FU-TE12R (TRV22)	
	IC651	8-759-388-63	IC NJU7064V(TE2)		IC651	8-759-388-63	IC NJU7064V(TE2) (TRV22)	
	IC652	8-759-234-77	IC TC4S66F		IC652	8-759-234-77	IC TC4S66F (TRV22)	
	IC653	8-759-234-77	IC TC4S66F		IC653	8-759-234-77	IC TC4S66F (TRV22)	
	IC655	8-752-855-05	IC CXP81120-024R		IC655	8-752-879-48	IC CXP81120-033R	
	L650	1-414-078-11	INDUCTOR 10uH		L650	1-414-078-11	INDUCTOR 10uH (TRV22)	
	L652	1-412-058-11	INDUCTOR CHIP 10uH		L652	1-412-058-11	INDUCTOR CHIP 10uH	
	Q650	8-729-402-42	TRANSISTOR UN5213		Q650	8-729-402-42	TRANSISTOR UN5213 (TRV22)	
	R650	1-216-837-11	METAL CHIP 22K 5%	1/16W	R650	1-216-837-11	METAL CHIP 22K 5%	1/16W(TRV22)
	R651	1-216-837-11	METAL CHIP 22K 5%	1/16W	R651	1-216-837-11	METAL CHIP 22K 5%	1/16W(TRV22)
	R652	1-216-837-11	METAL CHIP 22K 5%	1/16W	R652	1-216-837-11	METAL CHIP 22K 5%	1/16W(TRV22)
	R653	1-216-837-11	METAL CHIP 22K 5%	1/16W	R653	1-216-837-11	METAL CHIP 22K 5%	1/16W(TRV22)
	R654	1-216-837-11	METAL CHIP 22K 5%	1/16W	R654	1-216-837-11	METAL CHIP 22K 5%	1/16W(TRV22)
	R655	1-216-837-11	METAL CHIP 22K 5%	1/16W	R655	1-216-837-11	METAL CHIP 22K 5%	1/16W(TRV22)
	R656	1-216-803-11	METAL CHIP 33 5%	1/16W	R656	1-216-803-11	METAL CHIP 33 5%	1/16W(TRV22)
	R658	1-216-833-11	METAL CHIP 10K 5%	1/16W	R658	1-216-833-11	METAL CHIP 10K 5%	1/16W(TRV22)
	R659	1-216-833-11	METAL CHIP 10K 5%	1/16W	R659	1-216-833-11	METAL CHIP 10K 5%	1/16W(TRV22)
	R660	1-218-911-11	METAL CHIP 470K 0.50%	1/16W	R660	1-218-911-11	METAL CHIP 470K 0.50%	1/16W(TRV22)
	R661	1-218-911-11	METAL CHIP 470K 0.50%	1/16W	R661	1-218-911-11	METAL CHIP 470K 0.50%	1/16W(TRV22)
	R662	1-218-911-11	METAL CHIP 470K 0.50%	1/16W	R662	1-218-911-11	METAL CHIP 470K 0.50%	1/16W(TRV22)
	R663	1-218-911-11	METAL CHIP 470K 0.50%	1/16W	R663	1-218-911-11	METAL CHIP 470K 0.50%	1/16W(TRV22)
	R664	1-218-871-11	METAL CHIP 10K 0.50%	1/16W	R664	1-218-871-11	METAL CHIP 10K 0.50%	1/16W(TRV22)
	R665	1-216-857-11	METAL CHIP 1M 5%	1/16W	R665	1-216-857-11	METAL CHIP 1M 5%	1/16W(TRV22)
	R666	1-216-857-11	METAL CHIP 1M 5%	1/16W	R666	1-216-857-11	METAL CHIP 1M 5%	1/16W(TRV22)
	R667	1-218-871-11	METAL CHIP 10K 0.50%	1/16W	R667	1-218-871-11	METAL CHIP 10K 0.50%	1/16W(TRV22)
	R668	1-216-835-11	METAL CHIP 15K 5%	1/16W	R668	1-216-835-11	METAL CHIP 15K 5%	1/16W(TRV22)
	R669	1-216-835-11	METAL CHIP 15K 5%	1/16W	R669	1-216-835-11	METAL CHIP 15K 5%	1/16W(TRV22)
	R670	1-216-845-11	METAL CHIP 100K 5%	1/16W	R670	1-216-845-11	METAL CHIP 100K 5%	1/16W(TRV22)
	R672	1-216-845-11	METAL CHIP 100K 5%	1/16W	R672	1-216-845-11	METAL CHIP 100K 5%	1/16W
	R673	1-216-821-11	METAL CHIP 1K 5%	1/16W	R673	1-216-821-11	METAL CHIP 1K 5%	1/16W
	R674	1-216-845-11	METAL CHIP 100K 5%	1/16W	R674	1-216-845-11	METAL CHIP 100K 5%	1/16W
	R675	1-216-821-11	METAL CHIP 1K 5%	1/16W	R675	1-216-821-11	METAL CHIP 1K 5%	1/16W
	R676	1-216-857-11	METAL CHIP 1M 5%	1/16W	R676	1-216-857-11	METAL CHIP 1M 5%	1/16W

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-19	R682	1-218-885-11	METAL CHIP 39K 0.50% 1/16W		R682	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	(TRV22)
	R683	1-218-891-11	METAL CHIP 68K 0.50% 1/16W		R683	1-218-891-11	METAL CHIP 68K 0.50% 1/16W	(TRV22)
					R683	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV12/TRV12E)
	R684	1-218-885-11	METAL CHIP 39K 0.50% 1/16W		R684	1-218-885-11	METAL CHIP 39K 0.50% 1/16W	(TRV22)
	R685	1-218-891-11	METAL CHIP 68K 0.50% 1/16W		R685	1-218-891-11	METAL CHIP 68K 0.50% 1/16W	(TRV22)
					R685	1-218-864-11	METAL CHIP 0 5% 1/16W	(TRV12/TRV12E)
	R688	1-216-864-11	METAL CHIP 0 5% 1/16W		R688	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV22)
	R689	1-216-864-11	METAL CHIP 0 5% 1/16W		R689	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV22)
5-20	SE650	1-810-725-81	SENSOR, ANGULAR VELOCITY		SE650	1-810-725-81	SENSOR, ANGULAR VELOCITY	(TRV22)
	SE651	1-810-725-71	SENSOR, ANGULAR VELOCITY		SE651	1-810-725-71	SENSOR, ANGULAR VELOCITY	(TRV22)
	X650	1-579-553-11	VIBRATOR (12MHz)		X650	1-579-553-11	VIBRATOR (12MHz)	(TRV22)
5-20		A-7092-817-A	VC-167 BOARD, COMPLETE	(TRV11)		A-7093-110-A	VC-167P BOARD, COMPLETE	(TRV10E)
		A-7092-819-A	VC-167 BOARD, COMPLETE	(TRV21)		A-7093-131-A	VC-167P BOARD, COMPLETE	(TRV12E)
		A-7092-818-A	VC-167P BOARD, COMPLETE	(TRV11E)		A-7093-159-A	VC-167 BOARD, COMPLETE	(TRV22)
		A-7092-820-A	VC-167P BOARD, COMPLETE	(TRV21E)		A-7093-168-A	VC-167 BOARD, COMPLETE	(TRV12)
	C076	1-109-996-11	CERAMIC CHIP 1uF 6.3V		C076	1-115-156-11	CERAMIC CHIP 1uF 10V	
	C124	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C124	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C129	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TRV11/TRV21)	C129	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	(TRV12/TRV22)
	C129	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV11E/TRV21E)	C129	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV10E/TRV12E)
	C155	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)	C155	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV10E/TRV12E)
	C203	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	(TRV11/TRV11E)	C203	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	(TRV10E/TRV12/TRV12E)
5-21	C220	1-162-913-11	CERAMIC CHIP 8PF 0.5PF 50V	(TRV11/TRV21)	C220	1-162-913-11	CERAMIC CHIP 8PF 0.5PF 50V	(TRV10/TRV22)
	C221	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV11E/TRV21E)	C221	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV10E/TRV12E)
	C225	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	(TRV11/TRV21)	C225	1-164-218-11	CERAMIC CHIP 180PF 0.25PF 50V	(TRV12/TRV22)
	C225	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	(TRV11E/TRV21E)	C225	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	(TRV10E/TRV12E)
	C226	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	(TRV11E/TRV21E)	C226	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	(TRV10E/TRV12E)
	C228	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	(TRV21/TRV21E)	C228	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	(TRV22)
	C237	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	(TRV11/TRV21)	C237	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	(TRV12/TRV22)
	C237	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	(TRV11E/TRV21E)	C237	1-162-966-11	CERAMIC CHIP 0.0022uF 10% 50V	(TRV10E/TRV12E)

VC-167

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E					CCD-TRV10E/TRV12/TRV12E/TRV22				
	Ref. No.	Part No.	Description		Remarks	Ref. No.	Part No.	Description		Remarks
5-21	C238	1-135-149-21	TANTALUM CHIP	2.2uF	20% 10V (TRV11/TRV21)	C238	1-135-149-21	TANTALUM CHIP	2.2uF	20% 10V (TRV12/TRV22)
	C238	1-135-180-21	TANTALUM CHIP	3.3uF	20% 6.3V (TRV11E/TRV21E)	C238	1-104-912-11	TANTALUM CHIP	3.3uF	20% 6.3V (TRV10E/TRV12E)
	C243	1-162-925-11	CERAMIC CHIP	68PF	5% 50V (TRV11/TRV21)	C243	1-162-925-11	CERAMIC CHIP	68PF	5% 50V (TRV12/TRV22)
	C243	1-162-916-11	CERAMIC CHIP	12PF	5% 50V (TRV11E/TRV21E)	C243	1-162-916-11	CERAMIC CHIP	12PF	5% 50V (TRV10E/TRV12E)
	C244	1-164-315-11	CERAMIC CHIP	470PF	5% 50V (TRV11/TRV21)	C244	1-164-315-11	CERAMIC CHIP	470PF	5% 50V (TRV12/TRV22)
	C244	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV11E/TRV21E)	C244	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV10E/TRV12E)
	C247	1-162-927-11	CERAMIC CHIP	100PF	5% 50V (TRV11E/TRV21E)	C247	1-162-927-11	CERAMIC CHIP	100PF	5% 50V (TRV10E/TRV12E)
	C248	1-162-923-11	CERAMIC CHIP	47PF	5% 50V (TRV11E/TRV21E)	C248	1-162-923-11	CERAMIC CHIP	47PF	5% 50V (TRV10E/TRV12E)
	C254	1-162-975-11	CERAMIC CHIP	24PF	5% 50V (TRV11/TRV21)	C254	1-162-975-11	CERAMIC CHIP	24PF	5% 50V (TRV12/TRV22)
	C254	1-164-237-11	CERAMIC CHIP	16PF	5% 50V (TRV11E/TRV21E)	C254	1-164-237-11	CERAMIC CHIP	16PF	5% 50V (TRV10E/TRV12E)
	C259	1-162-927-11	CERAMIC CHIP	100PF	5% 50V (TRV11/TRV21)	C259	1-162-927-11	CERAMIC CHIP	100PF	5% 50V (TRV12/TRV22)
	C263	1-162-920-11	CERAMIC CHIP	27PF	5% 50V (TRV11E)	C263	1-162-920-11	CERAMIC CHIP	27PF	5% 50V (TRV10E/TRV12E)
	C263	1-162-919-11	CERAMIC CHIP	22PF	5% 50V (TRV11/TRV21)	C263	1-162-919-11	CERAMIC CHIP	22PF	5% 50V (TRV12/TRV22)
	C265	1-162-926-11	CERAMIC CHIP	82PF	5% 50V (TRV11/TRV11E/TRV21)	C265	1-162-926-11	CERAMIC CHIP	82PF	5% 50V
	C266	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV11/TRV11E/TRV21)	C266	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
	C268	1-162-913-11	CERAMIC CHIP	8PF	0.5PF 50V (TRV11/TRV21)	C268	1-162-913-11	CERAMIC CHIP	8PF	0.5PF 50V (TRV12/TRV22)
	C269	1-162-921-11	CERAMIC CHIP	33PF	5% 50V (TRV11E/TRV21E)	C269	1-162-921-11	CERAMIC CHIP	33PF	5% 50V (TRV10E/TRV12E)
	C406	1-109-996-11	CERAMIC CHIP	1uF	6.3V	C406	1-115-156-11	CERAMIC CHIP	1uF	10V
	C409	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V (TRV11E/TRV21E)	C409	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V (TRV10E/TRV12E)
	C413	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V (TRV11E/TRV21E)	C413	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V (TRV10E/TRV12E)
5-22	C508	1-164-816-11	CERAMIC CHIP	220PF	2% 50V (TRV11/TRV21)	C508	1-164-816-11	CERAMIC CHIP	220PF	2% 50V (TRV12/TRV22)
	C548	1-135-217-21	TANTALUM CHIP	15uF	20% 6.3V	C548	1-107-685-11	TANTALUM CHIP	15uF	20% 6.3V
	C571	1-107-682-11	CERAMIC CHIP	1uF	10% 16V (TRV11E/TRV21E)	C571	1-107-682-11	CERAMIC CHIP	1uF	10% 16V (TRV10E/TRV12E)

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E					CCD-TRV10E/TRV12/TRV12E/TRV22				
	Ref.No.	Part No.	Description		Remarks	Ref.No.	Part No.	Description		Remarks
5-22	C572	1-164-392-11	CERAMIC CHIP	390PF	5% 50V (TRV11E/TRV21E)	C572	1-164-392-11	CERAMIC CHIP	390PF	5% 50V (TRV10E/TRV12E)
	C573	1-135-091-91	TANTAL. CHIP	1uF	20% 16V (TRV11E/TRV21E)	C573	1-135-091-91	TANTAL. CHIP	1uF	20% 16V (TRV10E/TRV12E)
	C574	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V (TRV11E/TRV21E)	C574	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V (TRV10E/TRV12E)
	C575	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V (TRV11E/TRV21E)	C575	1-162-964-11	CERAMIC CHIP	0.001uF	10% 50V (TRV10E/TRV12E)
	C576	1-162-957-11	CERAMIC CHIP	220PF	5% 50V (TRV11E/TRV21E)	C576	1-162-957-11	CERAMIC CHIP	220PF	5% 50V (TRV10E/TRV12E)
	C577	1-162-957-11	CERAMIC CHIP	220PF	5% 50V (TRV11E/TRV21E)	C577	1-162-957-11	CERAMIC CHIP	220PF	5% 50V (TRV10E/TRV12E)
	C578	1-107-682-11	CERAMIC CHIP	1uF	10% 16V (TRV11E/TRV21E)	C578	1-107-682-11	CERAMIC CHIP	1uF	10% 16V (TRV10E/TRV12E)
	C712	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C712	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV10E/TRV22)
						C712	1-164-156-11	CERAMIC CHIP	0.1uF	25V (TRV12/TRV12E)
	C724	1-162-924-11	CERAMIC CHIP	56PF	5% 50V (TRV11/TRV11E)	C724	1-162-924-11	CERAMIC CHIP	56PF	5% 50V (TRV10E/TRV12/TRV12E)
	C724	1-162-920-11	CERAMIC CHIP	27PF	5% 50V (TRV21/TRV21E)	C724	1-162-920-11	CERAMIC CHIP	27PF	5% 50V (TRV22)
	C736	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C736	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV10E/TRV22)
						C736	1-164-156-11	CERAMIC CHIP	0.1uF	25V (TRV12/TRV12E)
	C739	1-162-921-11	CERAMIC CHIP	33PF	5% 50V (TRV11E/TRV21E)	C739	1-162-921-11	CERAMIC CHIP	33PF	5% 50V (TRV10E/TRV12E)
5-23	C740	1-164-315-11	CERAMIC CHIP	470PF	2% 50V (TRV11E/TRV21E)	C740	1-164-315-11	CERAMIC CHIP	470PF	2% 50V (TRV10E/TRV12E)
	C741	1-135-148-21	TANTAL. CHIP	1.5uF	20% 10V (TRV11E/TRV21E)	C741	1-107-688-11	TANTAL. CHIP	1.5uF	20% 10V (TRV10E/TRV12E)
	C742	1-164-156-11	CERAMIC CHIP	0.1uF	25V (TRV11E/TRV21E)	C742	1-164-156-11	CERAMIC CHIP	0.1uF	25V (TRV10E/TRV12E)
	C748		————			C748	1-164-156-11	CERAMIC CHIP	0.1uF	25V (TRV12/TRV12E)
	C750	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V	C750	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV10E/TRV22)
						C750	1-164-156-11	CERAMIC CHIP	0.1uF	25V (TRV12/TRV12E)
	C760	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V (TRV21/TRV21E)	C760	1-135-259-11	TANTAL. CHIP	10uF	20% 6.3V (TRV12/TRV12E/TRV22)
	C761	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV21/TRV21E)	C761	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V (TRV12/TRV12E/TRV22)
	C764	1-162-928-11	CERAMIC CHIP	120PF	5% 50V (TRV11/TRV21)	C764	1-162-928-11	CERAMIC CHIP	120PF	5% 50V (TRV12/TRV22)

VC-167

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-23	C765	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TRV11/TRV21)	C765	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TRV12/TRV22)
	C772	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V		C772	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
	CN702	1-774-641-21	CONNECTOR, FFC/FPC 18P	(TRV21/TRV21E)	CN702	1-774-641-21	CONNECTOR, FFC/FPC 18P	(TRV12/TRV12E/TRV22)
	D202	8-719-404-49	DIODE MA111	(TRV11E/TRV21E)	D202	8-719-404-49	DIODE MA111	(TRV10E/TRV12E)
	D705	8-719-002-81	DIODE 1T363	(TRV11E/TRV21E)	D705	8-719-002-81	DIODE 1T363	(TRV10E/TRV12E)
	IC400	8-752-870-27	IC CXP87460-008R		IC400	8-752-864-19	IC CXP87460-012R	
	IC404	8-759-327-61	IC LB8112V-TLM	(TRV11/TRV21)	IC404	8-759-327-61	IC LB8112V-TLM	(TRV12/TRV22)
	IC404	8-759-327-62	IC TA8482FN-EL	(TRV11E/TRV21E)	IC404	8-759-327-62	IC TA8482FN-EL	(TRV10E/TRV12E)
	IC570	8-759-334-09	IC CXA2003N	(TRV11E/TRV21E)	IC570	8-759-334-09	IC CXA2003N	(TRV10E/TRV12E)
	IC603	8-759-247-07	IC MPC17A34VMEL		IC603	8-759-351-46	IC MPC17A34VMEL	
	IC704	8-759-329-83	IC AD43063-REEL		IC704	8-752-375-80	IC CDX2312R-T4	
	IC707	8-759-297-76	IC CXD2152AREL	(TRV21/TRV21E)	IC707	8-759-446-62	IC HG51D267FGTL	(TRV12/TRV12E/TRV22)
	IC709	8-759-198-34	IC TA75S558F(TE85R)	(TRV11E/TRV21E)	IC709	8-759-198-34	IC TA75S558F(TE85R)	(TRV10E/TRV12E)
5-24	L205	1-412-955-11	INDUCTOR 22uH	(TRV11/TRV21)	L205	1-412-955-11	INDUCTOR 22uH	(TRV12/TRV22)
	L210	1-412-951-11	INDUCTOR 10uH	(TRV11E)	L210	1-412-951-11	INDUCTOR 10uH	(TRV10E/TRV12E)
	L210	1-412-955-11	INDUCTOR 22uH	(TRV11/TRV21)	L210	1-412-955-11	INDUCTOR 22uH	(TRV12/TRV22)
	L213	1-414-170-41	INDUCTOR 100uH	(TRV11/TRV21)	L213	1-414-170-41	INDUCTOR 100uH	(TRV12/TRV22)
	L213	1-414-196-41	INDUCTOR 47uH	(TRV11E/TRV21E)	L213	1-414-196-41	INDUCTOR 47uH	(TRV10E/TRV12E)
	L216	1-414-170-41	INDUCTOR 100uH	(TRV11E/TRV21E)	L216	1-414-170-41	INDUCTOR 100uH	(TRV10E/TRV12E)
	L570	1-414-078-11	INDUCTOR 10uH	(TRV11E/TRV21E)	L570	1-414-078-11	INDUCTOR 10uH	(TRV10E/TRV12E)
	L710	1-412-052-21	INDUCTOR CHIP 1uH		L710	1-412-052-21	INDUCTOR CHIP 1uH	(TRV10E/TRV12/TRV22)
					L710	1-412-058-11	INDUCTOR CHIP 10uH	(TRV12E)
	L716	1-414-078-11	INDUCTOR 10uH	(TRV21/TRV21E)	L716	1-414-078-11	INDUCTOR 10uH	(TRV12/TRV12E/TRV22)
	L752	1-414-196-41	INDUCTOR 47uH	(TRV11/TRV21)	L752	1-414-196-41	INDUCTOR 47uH	(TRV12/TRV22)
	L753	1-414-196-41	INDUCTOR 47uH	(TRV11/TRV21)	L753	1-414-196-41	INDUCTOR 47uH	(TRV12/TRV22)
	Q114	8-729-402-42	TRANSISTOR UN5213	(TRV11E/TRV21E)	Q114	8-729-402-42	TRANSISTOR UN5213	(TRV10E/TRV12E)
	Q126	8-729-402-42	TRANSISTOR UN5213	(TRV11E/TRV21E)	Q126	8-729-402-42	TRANSISTOR UN5213	(TRV10E/TRV12E)
	Q211	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TRV11/TRV21)	Q211	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TRV12/TRV22)
	Q216	8-729-420-20	TRANSISTOR XN4312		Q216	8-729-420-20	TRANSISTOR XN4312	(TRV10E/TRV12E)
	Q222	8-729-402-42	TRANSISTOR UN5213	(TRV11E/TRV21E)	Q222	8-729-402-42	TRANSISTOR UN5213	(TRV10E/TRV12E)
	Q223	8-729-230-63	TRANSISTOR 2SC4116-YG	(TRV11/TRV11E/TRV21)	Q223	8-729-230-63	TRANSISTOR 2SC4116-YG	
	Q224	8-729-420-24	TRANSISTOR 2SB1218A-QRS	(TRV11/TRV11E/TRV21)	Q224	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
	Q570	8-729-402-42	TRANSISTOR UN5213	(TRV11E/TRV21E)	Q570	8-729-402-42	TRANSISTOR UN5213	(TRV10E/TRV12E)
	Q753	8-729-013-15	TRANSISTOR 2SC4909-TL	(TRV11/TRV21)	Q753	8-729-013-15	TRANSISTOR 2SC4909-TL	(TRV12/TRV22)
	Q754	8-729-013-15	TRANSISTOR 2SC4909-TL	(TRV11/TRV21)	Q754	8-729-013-15	TRANSISTOR 2SC4909-TL	(TRV12/TRV22)
5-25	R094	1-216-864-11	METAL CHIP 0 5% 1/16W		R094		————	
	R101	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TRV11E/TRV21E)	R101	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TRV10E/TRV12E)

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-25	R115	1-216-845-11	METAL CHIP	100K 5% 1/16W	R115	1-216-845-11	METAL CHIP	100K 5% 1/16W (TRV12/TRV22)
	R159	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV11/TRV21)	R159	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV12/TRV22)
	R159	1-216-830-11	METAL CHIP	5.6K 5% 1/16W (TRV11E/TRV21E)	R159	1-216-830-11	METAL CHIP	5.6K 5% 1/16W (TRV10E/TRV12E)
	R169	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV11/TRV21)	R169	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV12/TRV22)
	R169	1-216-804-11	METAL CHIP	39 5% 1/16W (TRV11E/TRV21E)	R169	1-216-804-11	METAL CHIP	39 5% 1/16W (TRV10E/TRV12E)
	R176	1-216-823-11	METAL CHIP	1.5K 5% 1/16W (TRV11/TRV21)	R176	1-216-823-11	METAL CHIP	1.5K 5% 1/16W (TRV12/TRV22)
	R176	1-216-824-11	METAL CHIP	1.8K 5% 1/16W (TRV11E/TRV21E)	R176	1-216-824-11	METAL CHIP	1.8K 5% 1/16W (TRV10E/TRV12E)
	R177	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV11E/TRV21E)	R177	1-216-821-11	METAL CHIP	1K 5% 1/16W (TRV10E/TRV12E)
5-26	R202	1-216-836-11	METAL CHIP	18K 5% 1/16W (TRV11/TRV11E)	R202	1-216-836-11	METAL CHIP	18K 5% 1/16W (TRV10E/TRV12/TRV12E)
	R202	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV21/TRV21E)	R202	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV22)
	R203	1-216-832-11	METAL CHIP	8.2K 5% 1/16W (TRV11E)	R203	1-216-832-11	METAL CHIP	8.2K 5% 1/16W (TRV10E/TRV12E)
	R203	1-216-827-11	METAL CHIP	3.3K 5% 1/16W (TRV11)	R203	1-216-827-11	METAL CHIP	3.3K 5% 1/16W (TRV12)
	R206	1-216-815-11	METAL CHIP	330 5% 1/16W (TRV11/TRV21)	R206	1-216-815-11	METAL CHIP	330 5% 1/16W (TRV12/TRV22)
	R210	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV21)	R210	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV22)
	R210	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV11/TRV11E)	R210	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV10E/TRV12/TRV12E)
	R210	1-216-836-11	METAL CHIP	18K 5% 1/16W (TRV21E)				
	R211	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TRV21)	R211	1-216-825-11	METAL CHIP	2.2K 5% 1/16W (TRV22)
	R211	1-216-828-11	METAL CHIP	3.9K 5% 1/16W (TRV21E)				
	R226	1-216-833-11	METAL CHIP	10K 5% 1/16W (TRV11E/TRV21E)	R226	1-216-833-11	METAL CHIP	10K 5% 1/16W (TRV10E/TRV12E)
	R245	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV11/TRV21)	R245	1-216-864-11	METAL CHIP	0 5% 1/16W (TRV12/TRV22)
	R249	1-216-827-11	METAL CHIP	3.3K 5% 1/16W (TRV11/TRV21)	R249	1-216-827-11	METAL CHIP	3.3K 5% 1/16W (TRV12/TRV22)
	R249	1-216-824-11	METAL CHIP	1.8K 5% 1/16W (TRV11E/TRV21E)	R249	1-216-824-11	METAL CHIP	1.8K 5% 1/16W (TRV10E/TRV12E)
	R261	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV11E/TRV21E)	R261	1-216-841-11	METAL CHIP	47K 5% 1/16W (TRV10E/TRV12E)
	R262	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV11E/TRV21E)	R262	1-216-837-11	METAL CHIP	22K 5% 1/16W (TRV10E/TRV12E)
	R263	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV11/TRV21)	R263	1-216-829-11	METAL CHIP	4.7K 5% 1/16W (TRV12/TRV22)

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-26	R265	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TRV11E)	R265	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TRV10E/TRV12E)
	R265	1-216-817-11	METAL CHIP 470 5% 1/16W	(TRV11/TRV21)	R265	1-216-817-11	METAL CHIP 470 5% 1/16W	(TRV12/TRV22)
	R268	1-216-818-11	METAL CHIP 560 5% 1/16W	(TRV11E)	R268	1-216-818-11	METAL CHIP 560 5% 1/16W	(TRV10E/TRV12E)
	R268	1-216-820-11	METAL CHIP 820 5% 1/16W	(TRV11/TRV21)	R268	1-216-820-11	METAL CHIP 820 5% 1/16W	(TRV12/TRV22)
	R270	1-216-817-11	METAL CHIP 470 5% 1/16W	(TRV11E/TRV21E)	R270	1-216-817-11	METAL CHIP 470 5% 1/16W	(TRV10E/TRV12E)
	R271	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV11E/TRV21E)	R271	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV10E/TRV12E)
	R272	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TRV11E/TRV21E)	R272	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TRV10E/TRV12E)
	R279	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TRV11/TRV11E/TRV21)	R279	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
	R282	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TRV21E)	R282		————	
	R283	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11/TRV11E/TRV21)	R283	1-216-819-11	METAL CHIP 680 5% 1/16W	
	R284	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11/TRV11E/TRV21)	R284	1-216-819-11	METAL CHIP 680 5% 1/16W	
	R286	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TRV11/TRV11E/TRV21)	R286	1-216-836-11	METAL CHIP 18K 5% 1/16W	
	R287	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E/TRV21)	R287	1-216-864-11	METAL CHIP 0 5% 1/16W	
	R289	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TRV11/TRV11E/TRV21)	R289	1-216-839-11	METAL CHIP 33K 5% 1/16W	
	R290	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11E/TRV21E)	R290	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV12E)
5-27	R443	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV11/TRV21)	R443	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV12/TRV22)
	R445	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11/TRV21)	R445	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12/TRV22)
	R445	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11E/TRV21E)	R445	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV10E/TRV12E)
	R455	1-216-827-11	METAL CHIP 3.3K 5% 1/16W		R455	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
5-28	R570	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV11E/TRV21E)	R570	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV10E/TRV12E)
	R571	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	(TRV11E/TRV21E)	R571	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	(TRV10E/TRV12E)
	R575	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV11E/TRV21E)	R575	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV10E/TRV12E)
	R581	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)	R581	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV10E/TRV12E)
	R713	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)	R713	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV10E/TRV12E)

Note: The electrical specification of CCD-TRV12 (Tourist model)/TRV12PK are the same as that of CCD-TRV12 (E model).
The electrical specification of CCD-TRV112 is the same as that of CCD-TRV12 (US model).
The electrical specification of CCD-TRV212 is the same as that of CCD-TRV22 (US model).

PAGE	CCD-TRV11/TRV11E/TRV21/TRV21E				CCD-TRV10E/TRV12/TRV12E/TRV22			
	Ref. No.	Part No.	Description	Remarks	Ref. No.	Part No.	Description	Remarks
5-28	R714	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TRV11E/TRV21E)	R714	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TRV10E/TRV12E)
	R715	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TRV11E/TRV21E)	R715	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TRV10E/TRV12E)
	R717	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV11E/TRV21E)	R717	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV10E/TRV12E)
	R758	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)	R758	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV10E/TRV12E)
	R759	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TRV11E/TRV21E)	R759	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TRV10E/TRV12E)
	R760	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV21)	R760	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV12/TRV22)
	R761	1-216-813-11	METAL CHIP 220 5% 1/16W	(TRV11/TRV21)	R761	1-216-813-11	METAL CHIP 220 5% 1/16W	(TRV12/TRV22)
	X400	1-760-314-11	VIBRATOR, CRYSTAL (11.718MHz)	(TRV11/TRV21)	X400	1-760-314-11	VIBRATOR, CRYSTAL (11.718MHz)	(TRV12/TRV22)
	X400	1-760-315-11	VIBRATOR, CRYSTAL (11.718MHz)	(TRV11E/TRV21E)	X400	1-760-315-11	VIBRATOR, CRYSTAL (11.718MHz)	(TRV10E/TRV12E)
	X701	1-760-320-11	VIBRATOR, CRYSTAL (28.375MHz)	(TRV11/TRV21)	X701	1-760-320-11	VIBRATOR, CRYSTAL (28.375MHz)	(TRV12/TRV22)
	X701	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	(TRV11E/TRV21E)	X701	1-760-321-11	VIBRATOR, CRYSTAL (28.375MHz)	(TRV10E/TRV12E)
	X702	1-579-780-21	VIBRATOR, CRYSTAL (17.7MHz)	(TRV11E/TRV21E)	X702	1-579-780-21	VIBRATOR, CRYSTAL (17.7MHz)	(TRV10E/TRV12E)
5-29		A-7072-362-A	VF-102 BOARD, COMPLETE	(TRV11/TRV21)		A-7072-362-A	VF-102 BOARD, COMPLETE	(TRV12:US/TRV22)
		A-7072-357-A	VF-102P BOARD, COMPLETE	(TRV11E/TRV21E)		A-7072-357-A	VF-102P BOARD, COMPLETE	(TRV10E/TRV12E)
						A-7072-362-A	VF-102P BOARD, COMPLETE	(TRV12:E, Canadian, Hong Kong/TRV22)
	Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	(TRV11:US, Canadian/TRV21:US, Canadian)	Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6	(TRV12/TRV22)
	R904	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11:US, Canadian/TRV21:US, Canadian)	R904	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV12/TRV22)
	R905	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	(TRV11:US, Canadian/TRV21:US, Canadian)	R905	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	(TRV12/TRV22)
	R916	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	(TRV11/TRV21)	R916	1-218-879-11	METAL CHIP 22K 0.50% 1/16W	(TRV12/TRV22)
	R916	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	(TRV11E/TRV21E)	R916	1-218-881-11	METAL CHIP 27K 0.50% 1/16W	(TRV10E/TRV12E)
	R917	1-218-891-11	METAL CHIP 68K 0.50% 1/16W	(TRV11/TRV21)	R917	1-218-891-11	METAL CHIP 68K 0.50% 1/16W	(TRV12/TRV22)
	R917	1-218-893-11	METAL CHIP 82K 0.50% 1/16W	(TRV11E/TRV21E)	R917	1-218-893-11	METAL CHIP 82K 0.50% 1/16W	(TRV10E/TRV12E)
	R933	1-216-811-11	METAL CHIP 150 5% 1/16W		R933	1-216-808-11	METAL CHIP 82 5% 1/16W	

MISCELLANEOUS

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Ref. No.	Part No.	Description	Remarks
70	1-542-259-11	MICROPHONE, CAP	
104	1-775-520-11	CABLE, FLEXIBLE FLAT 45P	
117	1-801-289-21	INDICATOR MODULE, LIQUID CRYST (TYPE B)	
117	1-801-393-21	INDICATOR MODULE, LIQUID CRYST (TYPE A)	
⚠118	1-517-524-21	TUBE, FLUORESCENT, COLD CATHODE	(TRV10E)(TYPE B)
⚠118	1-517-524-41	TUBE, FLUORESCENT, COLD CATHODE	(TRV10E)(TYPE A)
⚠118	1-517-524-51	TUBE, FLUORESCENT, COLD CATHODE	(TRV12/TRV12E/TRV12PK/TRV22/ TRV112/TRV212)(TYPE A)
⚠118	1-517-524-61	TUBE, FLUORESCENT, COLD CATHODE	(TRV12/TRV12E/TRV12PK/TRV22/ TRV112/TRV212)(TYPE B)
126	1-505-291-11	SPEAKER (DIA 2.8 CM)	
⚠154	1-452-673-31	CRT ASSY (M01KXX90WB)	
203	1-775-518-11	CABLE, FLEXIBLE FLAT 12P	
209	1-547-739-21	LENS, ZOOM (VCL-5412WB)	
211	1-547-558-11	FILTER BLOCK, OPTICAL	(TRV10E/TRV12/TRV12E/TRV12PK/TRV112)
211	1-547-735-51	FILTER BLOCK, OPTICAL (TRV22/TRV212)	
224	1-660-435-11	FP402 FLEXIBLE BOARD (EXCEPT TRV10E)	
D001	8-719-988-42	DIODE GLP453S	
IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-11)	(CCD IMAGER)(TRV12/TRV12PK/TRV112)
IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11)	(CCD IMAGER)(TRV10E/TRV12E)
IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41)	(CCD IMAGER)(TRV22/TRV212)
M901	A-7048-810-A	DRUM BLOCK ASSY (DGH-0C4A-R)	(TRV10E/TRV12E)
M901	A-7048-831-A	DRUM BLOCK ASSY (DGH-0D1A-R)	(TRV12/TRV12PK/TRV22/TRV112/TRV212)
M902	8-835-531-32	CAPSTAN ASSY	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S003	1-762-622-11	SWITCH, ROTARY (ZOOM SW)	
S901	1-762-436-15	SWITCH, ROTARY (ENCODER)	

ACCESSORIES & PACKING MATERIALS

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Ref. No.	Part No.	Description	Remarks
⚠	A-7009-226-A	AC-V16 AC POWER ADAPTOR (US, Canadian)	
⚠	A-7009-227-B	AC-V16 AC POWER ADAPTOR (E, AEP, Russian)	
⚠	A-7009-228-A	AC-V16 AC POWER ADAPTOR (UK)	
⚠	A-7009-231-A	AC-V16 AC POWER ADAPTOR (Hong kong)	
⚠	A-7009-232-A	AC-V16 AC POWER ADAPTOR (Tourist)	
	A-7092-608-A	CASE (N) ASSY, BATTERY	(TRV12:Canadian/ TRV22;Canadian/TRV10E/TRV12E)
	A-7092-697-A	CASE (N) ASSY (2), BATTERY	(TRV12:US/TRV22:US)
	1-473-342-11	REMOTE COMMANDER (RMT-713)	
⚠	1-569-008-11	ADAPTOR, CONVERSION 2P	(TRV12:E, Hong kong, Tourist)
	1-574-039-21	CORD, CONNECTION (AV CABLE)(1.5m)	
⚠	1-764-622-11	ADAPTOR, CONVERSION (TRV10E/TRV12E)	
	3-704-291-01	BAG (STANDARD), PROTECTION(TRV12PK ONLY)	
	3-800-844-11	INSTRUCTION (TRV10E:AEP, UK)	
	3-859-057-11	MANUAL, INSTRUCTION (ENGLISH)	(TRV12:US, Canadian/TRV22/TRV112/TRV212)
	3-859-057-21	MANUAL, INSTRUCTION (FRENCH)	(TRV12:Canadian/TRV22:Canadian)
	3-859-057-31	MANUAL, INSTRUCTION (ENGLISH, SPANISH)	(TRV12:E, Hong kong, Tourist/TRV12PK)
	3-859-057-41	MANUAL, INSTRUCTION (CHINESE)	(TRV12:E, Hong kong, Tourist/TRV12PK)
	3-859-062-11	MANUAL, INSTRUCTION (ENGLISH, RUSSIAN)	(TRV10E:UK, Russian/TRV12E)
	3-859-062-21	MANUAL, INSTRUCTION (SWEDISH, POLISH)	(TRV10E:Russian/TRV12E)
	3-859-062-31	MANUAL, INSTRUCTION (GERMAN, ITALIAN)	(TRV10E:AEP)
	3-859-062-41	MANUAL, INSTRUCTION (FRENCH, DUTCH)	(TRV10E:AEP)
	3-859-480-11	INSTRUCTION (POND)	(TRV12/TRV22/TRV112/TRV212)
	3-947-969-21	BELT (S), SHOULDER	
	3-967-166-01	CASE (330), SOFT (TRV12PK ONLY)	
*	3-968-092-01	PAT, PROTECTION (TRV12PK ONLLY)	
*	3-968-618-01	CUSHION, ACC	
*	3-968-619-01	CUSHION (LOWER)	
*	3-970-001-21	INDIVIDUAL CARTON	(TRV12:E, Hong kong, Tourust)
*	3-970-688-41	INDIVIDUAL CARTON (TRV12PK)	
*	3-974-801-01	INDIVIDUAL CARTON (TRV12E)	
*	3-974-801-11	INDIVIDUAL CARTON (TRV12:US, Canadian)	
*	3-974-801-21	INDIVIDUAL CARTON (TRV22)	
*	3-974-801-31	INDIVIDUAL CARTON (TRV10E)	
*	3-974-801-41	INDIVIDUAL CARTON (TRV112)	
*	3-974-801-51	INDIVIDUAL CARTON (TRV212)	
	**NP-33	BATTTERY PACK	

NOTE.
**MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

SECTION 4
ADJUSTMENTS

4-1. CAMERA SECTION ADJUSTMENT

• 2.5 inch LCD information

There are 2 kinds of TYPE A and TYPE B. Identify either TYPE A or B from the suffix of the board. However, PC board without parts (no mount) is not supplied.

BOARD	TYPE A	TYPE B
PD-67	1-660-424-13	1-660-424-22
SD-21	1-660-425-12	1-660-425-22

NTSC model: CCD-TRV12/TRV12PK/TRV22/TRV112/TRV212
PAL model: CCD-TRV10E/TRV12E

4-1-1. CAMERA SYSTEM ADJUSTMENT
1-1. LCD system adjustments (PD-67 board)

Note 1: The backlight (fluorescent lamp is driven by high voltage AC power supply.
Therefore, be careful not to touch the back light holder with hand or you will receive an electric shock.

Note 2: When replacing the LCD unit, be careful not to damage the LCD unit with static electricity.

Note 3: Set the BRIGHT knob to the center click position.

[Adjustment connector]

Most measurement points of the LCD adjustment are concentrated at the CN301 of the PD-67 board. Connect the measuring equipment to CN301 via the measuring pin tool. The following table shows the pin numbers and signal names of CN301.

CN301 (TYPE A)

Pin No.	Signal Name	Pin No.	Signal Name
1	VR	2	VG
3	VB	4	HDB
5	GND	6	SRT
7	SYNC	8	N. C.
9	-7.5 V		

CN301 (TYPE B)

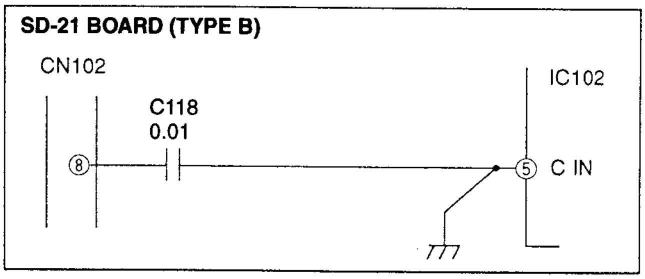
Pin No.	Signal Name	Pin No.	Signal Name
1	VR	2	VG
3	VB	4	HSY
5	GND	6	SPD
7	H-SYNC	8	COM-O
9	+7.5V		

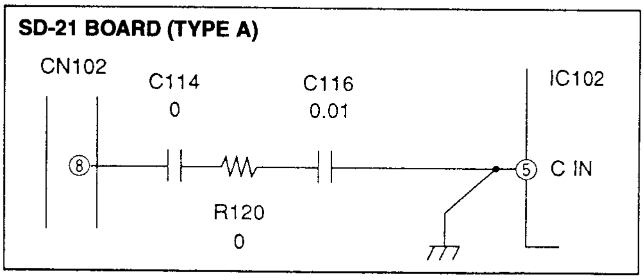
1. Multi CPC Parts code:J-6082-311-A

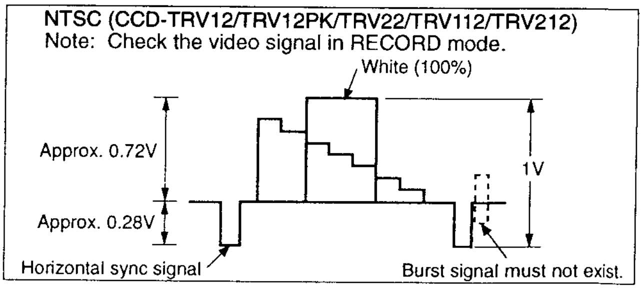
2. Alignment tape
NTSC (CCD-TRV12/TRV12PK/TRV22/TRV112/TRV212):
WR5-4NL (8-967-995-51)
PAL (CCD-TRV10E/TRV12E):
WR5-4CL (8-967-995-56)

[Video input signal for adjustment]

Playback an alignment tape. Use the color bar signal of the alignment tape playback as the input signal to this machine. Then check that the white (100%) signal amplitude at CN102 pin ⑦ on the SD-21 board is 1.00 Vp-p. If the signal column specifies the "Color bar signal with the chroma and burst signals turned OFF", remove the capacitor C114: TYPE A/C118: TYPE B on the SD-21 board, and connect the IC102 pin ⑤ to GND. Return C114: TYPE A/ C118: TYPE B and IC102 pin ⑤ to the original connections upon completion of adjustment.


SD-21 BOARD (TYPE B)
CN102
IC102
C118
0.01
⑧
⑤
C IN


SD-21 BOARD (TYPE A)
CN102
C114
0
C116
0.01
IC102
⑧
⑤
C IN
R120
0


NTSC (CCD-TRV12/TRV12PK/TRV22/TRV112/TRV212)
Note: Check the video signal in RECORD mode.
White (100%)
Approx. 0.72V
Approx. 0.28V
1V
Horizontal sync signal
Burst signal must not exist.

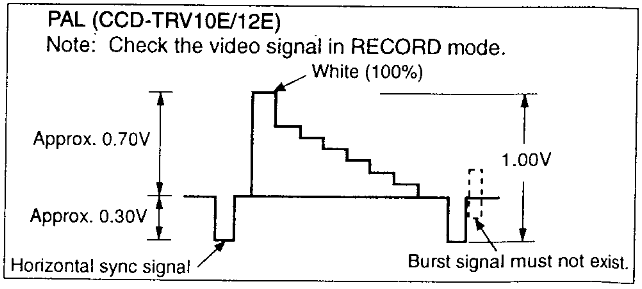

PAL (CCD-TRV10E/12E)
Note: Check the video signal in RECORD mode.
White (100%)
Approx. 0.70V
Approx. 0.30V
1.00V
Horizontal sync signal
Burst signal must not exist.

Fig. 6-1-13 Color bar signal with chroma and burst signals switched OFF.

[Power supply voltage adjustment]

Adjust the power supply voltage to be input to the battery terminal so that the voltage across PD-67 board CN303 pins ⑩ (LCD UNREG) and pins ⑪ or ⑫ (UNREG GND) is 6.5 ± 0.1Vdc.

Power supply voltage check (PD-67, SD-21 boards)

Subject	Any subject
Measuring equipment	Digital voltmeter
DAC 3.1V check	
Measurement point	CN102 Pin ⑤ (SD-21)
Specification	3.1±0.1Vdc (GND : CN102 Pin ⑥)
LCD 4.9V check	
Measurement point	CN303 Pin ⑥ (PD-67)
Specification	4.8±0.05Vdc (GND : CN303 Pin ⑦)
LCD UNREG check	
Measurement point	CN303 Pin ⑩ (PD-67)
Specification	6.5±0.1Vdc (GND : CN303 Pin⑪ or ⑫)

1-1. EVR initial data input

Mode	Stop
Signal	Any signal
Adjustment page	F

Note : Do not rewrite the EE PROM data except when it is necessary such as replacement of SD-21 board IC101.

Adjustment procedure:

- TYPE A

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8	C0	After setting the data, press the PAUSE button.
		D9	(B0) [60]	
		DA	(6A) [7A]	
		DB	80	
		DC	80	
		DD	(A0)[AA]	
		DE	90 [8A]	
		DF	(C0) [BA]	
		E0	80	
		E1	80	
		E2	(8A) [90]	
		E3	50	
3	6	00	00	After setting the data, press the PAUSE button. (End)

No mark: NTSC/PAL
( ) : NTSC
[ ] : PAL

- TYPE B

Order	Page	Address	Data	Procedure
1	6	00	01	
2	F	D8	80	
		D9	(9A) [7A]	
		DA	(8A) [5A]	
		DB	60	
		DC	6A	
		DD	A0	
		DE	(8A)[80]	
		DF	30	
		E0	6A	
		E1	2A	
		E2	(4A) [60]	
		E3	65	
3	6	00	00	

No mark: NTSC/PAL
( ) : NTSC
[ ] : PAL

1-2. –7.5 V adjustment (TYPE A Only)

Mode	Stop
Signal	No signal
Measurement point	PD-67 board CN301 pin ⑨ (–7.5V)
Measuring equipment	Digital voltmeter
Adjustment page	F
Adjustment address	E3
Specification	A=–7.5±0.1Vdc

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E3		Change data using the PLAY and STOP buttons so that the voltage goes to the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-3. VCO adjustment

Purpose: Sets the VCO free-run frequency.

Adjustment Error: Incorrect picture on EVF

Mode	Stop
Signal	No signal
Measurement point	PD-67 board CN301 pin ④ (HDB: TYPE A) (HSY: TYPE B)
Measuring equipment	Frequency counter
Adjustment page	F
Adjustment address	DE
Specification	NTSC: f=15734±30 Hz PAL: f=15625±30 Hz

Adjustment procedure:

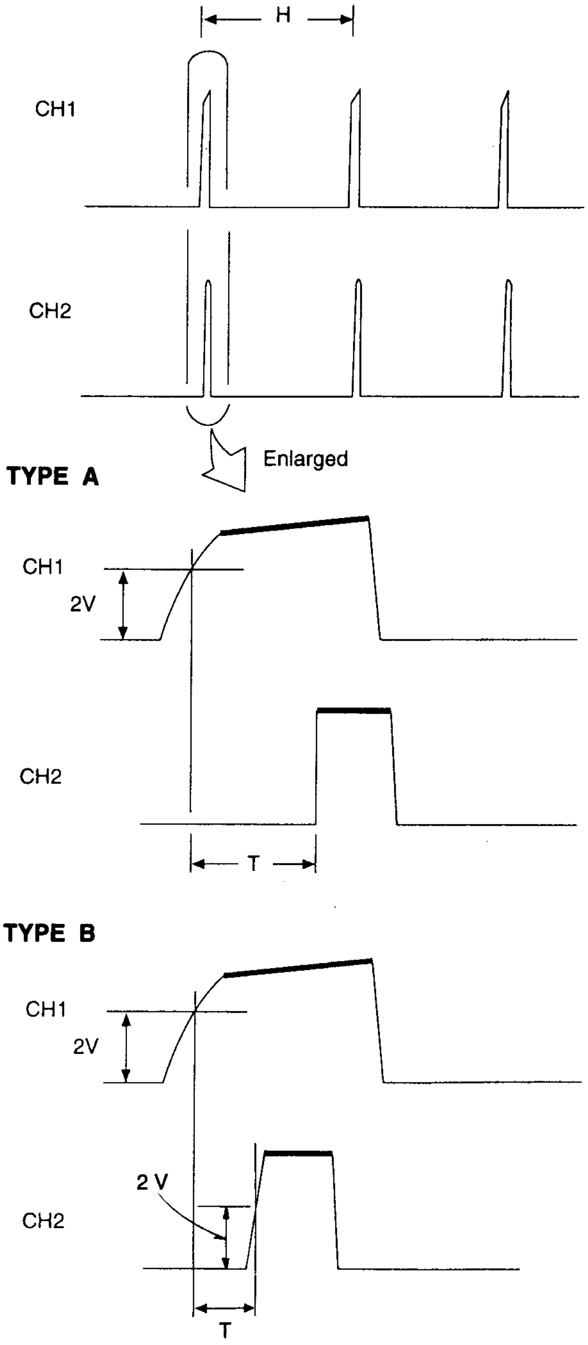
Order	page	Address	Data	Procedure
1				Remove C108 (10 μF capacitor) (SD-21 board): TYPE A Remove C107 (1 μF capacitor) (SD-21 board): TYPE B
2				Press the DATA SCREEN button of the remote commander to disappear the display.
3	6	00	01	After setting the data, press the PAUSE button. (Preparation)
4	F	DE		Change data using the PLAY and STOP buttons until the oscillating frequency satisfies the specification.
5				Press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)
7				Connect C108 (10 μF capacitor) (SD-21 board): TYPE A Connect C107 (1 μF capacitor) (SD-21 board): TYPE B

1-4. Horizontal display position adjustment

Purpose: Adjust the horizontal position of picture on LCD display.
Adjustment Error: Picture position will be shifted left or right.

Mode	Stop
Signal	Color bar signal
Measurement point	CH1: PD-67 board CN301 pin ⑦ (SYNC) CH2: PD-67 boad CN301 pin ⑥ (SRT: TYPE A) (SPD: TYPE B)
Measuring equipment	Oscilloscope
Adjustment page	F
Adjustment address	E2
Specification	TYPE A (NTSC): T=1.10±0.10µsec (PAL): T=0.60±0.10µsec TYPE B (NTSC): T=0.90±0.10µsec (PAL): T=1.90±0.10µsec

Note: Set the LCD so that it is directed toward the lens.
(The waveform is different depending upon direction.)



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E2		Change data using the PLAY and STOP button until the delay time "T" satisfies the specification.
3				After setting the data, press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-5. D RANGE adjustment (TYPE B only)

Purpose : Adjust to the proper LCD panel driving dynamic range.

Adjustment Error : Image will be saturated (whitish) or blackish.

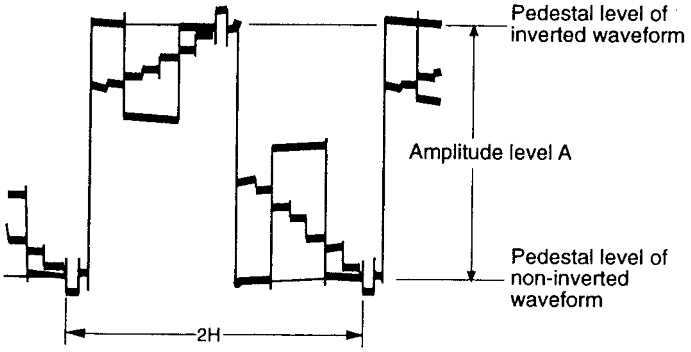
Mode	Playback
Signal	Color bar signal with chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring instrument	Oscilloscope External trigger: CN301 Pin ④
Adjustment page	F
Adjustment address	E0
Specified value	NTSC: A=3.65±0.05 Vp-p PAL: A=3.70±0.05 Vp-p

Note : Check that the BRIGHT Knob is set to the center click position.

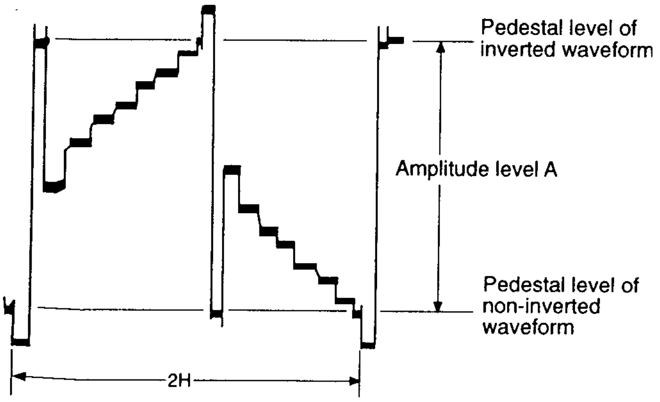
Adjustment procedure :

Oder	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E0		Change the data of page : F address : E0, and adjust the amplitude level (A) of the VG signal to the specified value. Amplitude : Level difference between the reverse waveform pedestal and non-reversed waveform pedestal.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

NTSC


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

PAL


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

1-6-1. BRIGHT adjustment (TYPE A)

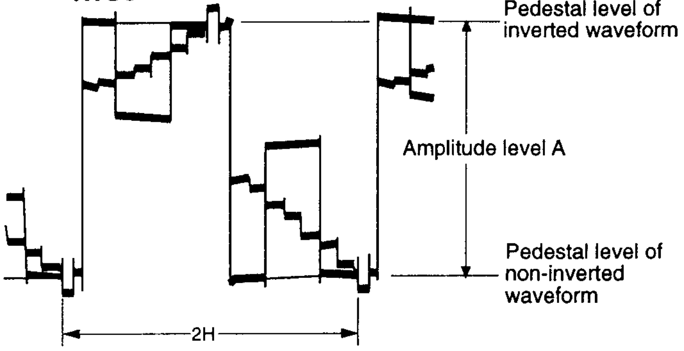
Purpose: Adjusts video signal level to drive the LCD panel.

Adjustment Error: Picture on LCD will be white saturated or black compressed.

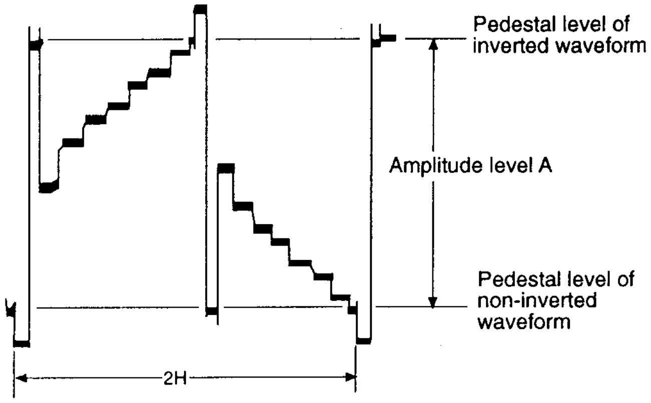
Mode	Playback
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN302 Pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	D8
Specified value	NTSC: A=1.90±0.05 Vp-p PAL: A=1.80±0.05 Vp-p

Note 1: Check that the BRIGHT knob is set to the center click position.

NTSC


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

PAL


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8		Change data using the PLAY and STOP buttons until the VG signal amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

Note 2: The adjustment data must be within the range from 41. to BF.

Related Adjustment: CONTRAST adjustment

1-6-2. BRIGHT adjustment (TYPE B)

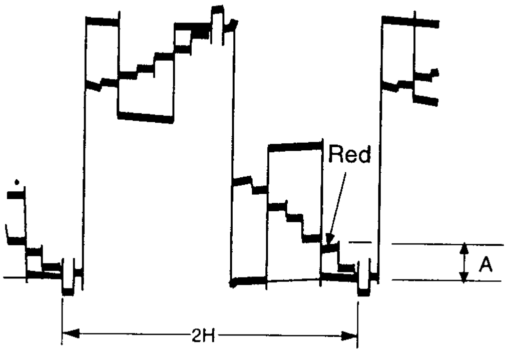
Purpose: Adjusts video signal level to drive the LCD panel.

Adjustment Error: Picture on LCD will be white saturated or black compressed.

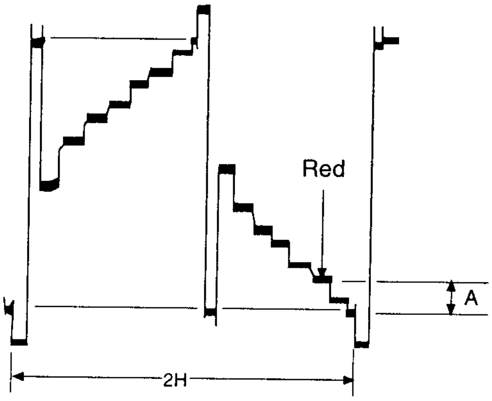
Mode	Playback
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN302 Pin ④ (HSY)]
Adjustment page	F
Adjustment address	D8
Specified value	NTSC: A=1.20±0.05 Vp-p PAL: A=1.15±0.05 Vp-p

Note: Check that the BRIGHT knob is set to the center click position.

NTSC



PAL



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8		Change data using the PLAY and STOP buttons until the VG signal amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-7-1. CONTRAST adjustment (TYPE A)

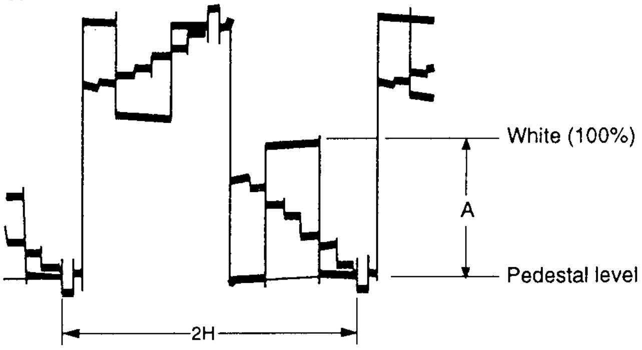
Purpose: Adjusts contrast of LCD picture

Adjustment Error: Details of black will be lost, or white saturated/black compressed picture.

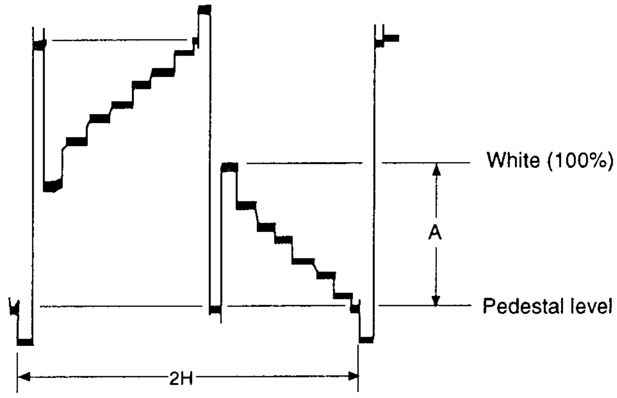
Mode	Playback
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN302 Pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	DD
Specified value	NTSC: A=2.30±0.05 Vp-p PAL: A=2.20±0.05 Vp-p

Note 1: Check that the BRIGHT knob is set to the center click position.

NTSC



PAL



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DD		Change data using the PLAY and STOP buttons until the amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

Note 2: After this adjustment, check BRIGHT of viewfinder.
If it is incorrect, adjust it again.

Related Adjustment: BRIGHT adjustment

1-7-2. CONTRAST adjustment (TYPE B)

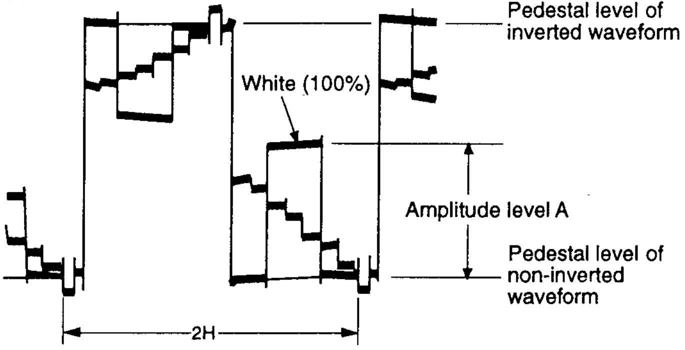
Purpose: Adjusts contrast of LCD picture

Adjustment Error: Details of black will be lost, or white saturated/black compressed picture.

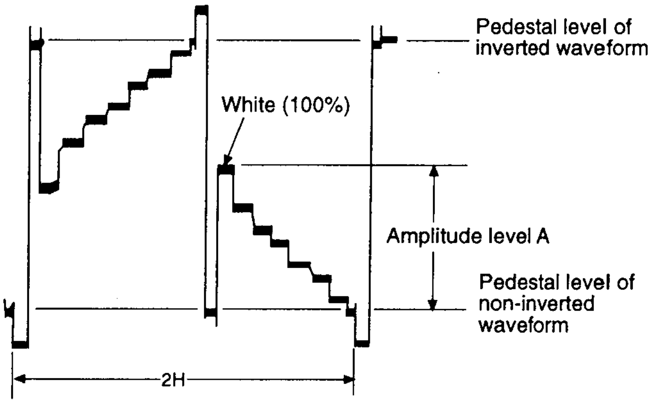
Mode	Playback
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN302 Pin ④ (HSY)]
Adjustment page	F
Adjustment address	DD
Specified value	NTSC: A=3.45±0.05 Vp-p PAL: A=3.20±0.05 Vp-p

Note 1: Check that the BRIGHT knob is set to the center click position.

NTSC


Pedestal level of inverted waveform
White (100%)
Amplitude level A
Pedestal level of non-inverted waveform
2H

PAL


Pedestal level of inverted waveform
White (100%)
Amplitude level A
Pedestal level of non-inverted waveform
2H

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DD		Change data using the PLAY and STOP buttons until the amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)
5				Connect C118 (0.01μF capacitor) (SD-21 board)

Note 2: After this adjustment, check BRIGHT of viewfinder. If it is incorrect adjust it again.

1-8. V-COM level adjustment (TYPE B only)

Purpose: Set to contrast of the image.

Adjustment Error: Image will be blue (whitish) or saturated.

Mode	Playback
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ⑧ (COM-O)
Measuring equipment	Oscilloscope
Adjustment page	F
Adjustment address	E1
Specified value	A=6.50±0.05 Vp-p

Note 1: Check that the BRIGHT knob is set to the center click position.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E1		Change the data of page : F, address : E1, and adjust the V-COM level (A) to the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

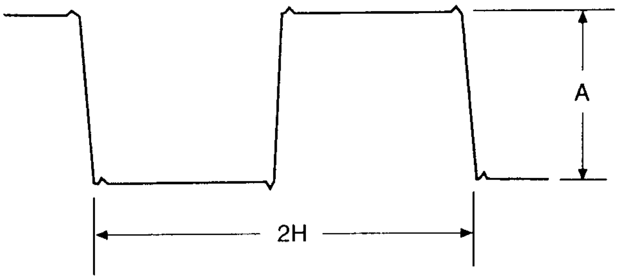


Fig. 6-3-6

Note 2: Execute always after the BRIGHT CONTRAST is adjusted.

1-9. COLOR adjustment

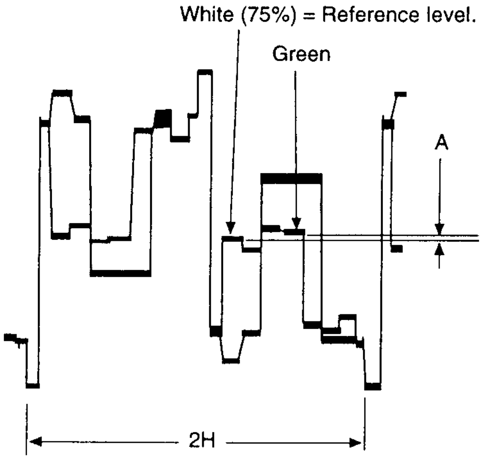
Purpose: Adjusts color for standard level.

Adjustment Error: Color will be too much or too small.

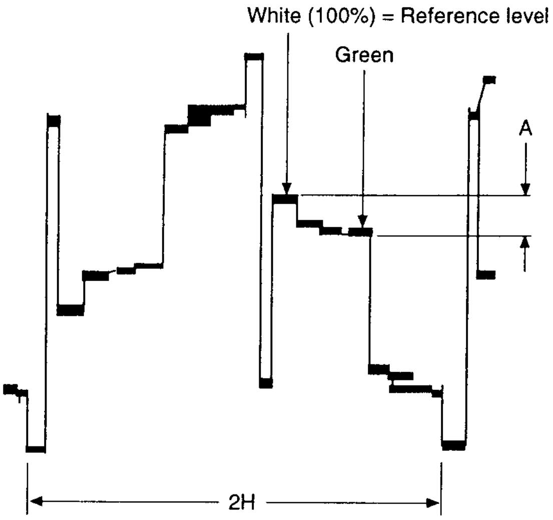
Mode	Playback
Signal	Color bar signal (with the chroma and burst signals)
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	D9
Specified value	TYPE A (NTSC): A=0.10±0.05 Vp-p (PAL): A=–0.30±0.05Vp-p TYPE B (NTSC): A=0.35±0.05 Vp-p (PAL): A=–0.60±0.05 Vp-p

Note 1: Execute after the BURST CLEANING is adjusted (PAL model only).

NTSC



PAL



Adjustment procedure:

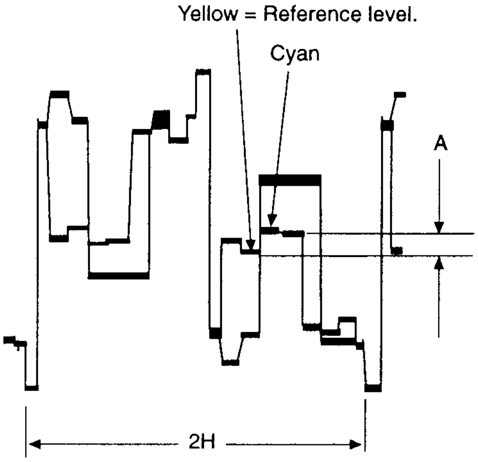
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D9		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-10. HUE adjustment (NTSC model only)

Purpose: Adjust for standard hue.

Adjustment Error: Unnatural hue.

Mode	Playback
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	DA
Specified value	TYPE A: 0.20±0.05 Vp-p TYPE B: 0.30±0.05 Vp-p



Adjustment procedure:

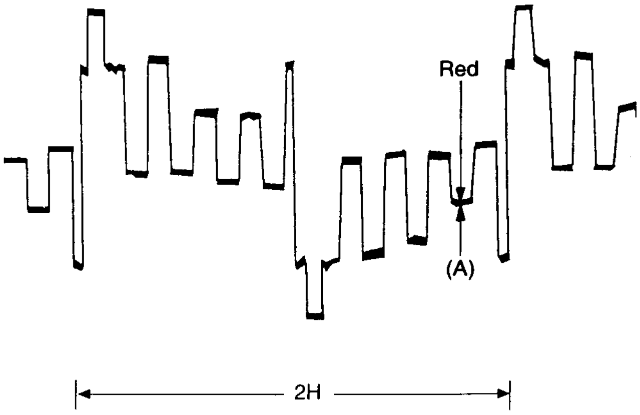
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DA		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-11. BURST CLEANING adjustment (PAL model only)

Purpose: Adjust for standard hue.

Adjustment Error: Unnatural hue.

Mode	Playback
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ③ (VB)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	DA
Specification	Minimum amplitude of the flicker of the red position.



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DA		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-12. V-COM adjustment

Purpose:	Adjusts for correct voltage of the DC bias voltage of the common electrode signal of the LCD panel.
Adjustment Error:	Details of the LCD picture will be lost. Flicker occurs easily. Vertical stripes will appear.

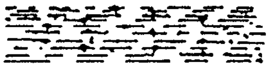
Mode	Playback PAUSE
Signal	Alignment tape: color bar for operation check segment NTSC: WR5-4NL PAL: WR5-4CL
Measurement point	To be confirmed on LCD display
Measuring equipment	
Adjustment page	F
Adjustment address	DF

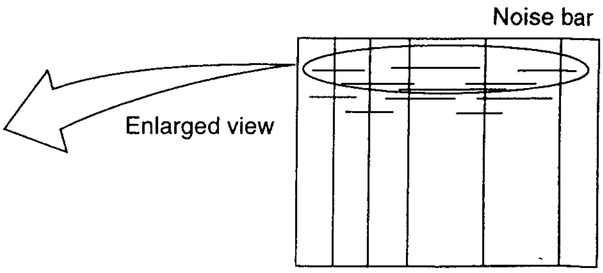
Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2				Establish the PB PAUSE state using operation keys of the camera.
3	F	DF		Change data using the PLAY and STOP buttons of the adjustment remote commander and observe the noise bar portion. Find the noise bar showing noise similar to head clogging. Keep pressing the PLAY button until black dots can be seen clearly. This data is D_A. Then keep pressing the STOP button until black dots can be seen clearly. This data is D_B.
4				Convert the D_A and D_B to the decimal value which are D_A' and D_B'. (Refer to Original Service manual page 6-12) [Conversion Table between hexadecimal and decimal values]. Then calculate D_C' using the equation $D_C' = (D_A' + D_B') \div 2$
5	F	DF		Set data to DC and press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)

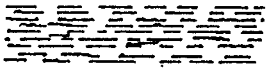
Note: This adjustment must be executed after the BRIGHT and CONTRAST adjustments are completed.

Keep pressing the PLAY button.

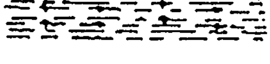




Find the noise bar showing noise similar to head clogging.



Keep pressing the STOP button.



1-13. White balance adjustment

Purpose: Adjust for correct white balance.

Adjustment Error: Color reproduction on LCD display will be poor.

Mode	Playback
Signal	Color bar signal with chroma and burst signals switched OFF
Measurement point	To be confirmed on LCD display
Measuring equipment	
Adjustment page	F
Adjustment address	DB DC
Specification	Image on the LCD display must not have any color.

Note1: Start adjustment within 30±5 seconds after the back-light turns ON.

Note2: During adjustment, the LCD protection film must be peeled off.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DB DC		Change the DB and DC data using the PLAY and STOP buttons until the image on the LCD display has no color.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

1-2. PREPARATIONS BEFORE ADJUSTMENT
2-1. Precautions

1. Switch settings

Adjust the switches to the following positions without loading the cassette tape unless otherwise specified.

1) Camera/video power switch
   Operation switch block ....Camera
2) PROGRAM AE switch (PD-67 board S301)................AUTO
3) 16:9 WIDE switch (CF-42 board S486) ....OFF
   (CCD-TRV12: E, Hong Kong, Tourist/TRV12E/TRV12PK)
   STEADY SHOT switch (CF-42 board S486) ....OFF
   (CCD-TRV22/212)
4) D ZOOM switch (CF-42 board S300) ....OFF
   (EXCEPT CCD-TRV10E)
5) REC MODE switch (CF-42 board S483) ....SP

2. Adjustment sequence

Adjust in the given order.

3. Subject

1) Set the camera and pattern box as shown in Fig. 4-1-1.
2) Color bar chart (Standard picture frame)

- Adjust the picture frame as shown in Fig. 4-1-2.
- Adjust camera zooming and direction until the camera output waveform on the oscilloscope shown in Fig. 4-1-2 (a) and the color picture on the monitor TV shown in Fig. 4-1-2 (b) have been acquired.
- Maintain this setup until adjustment is complete.

3) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box and adjust the camera setup until the white pattern picture frame is the same size and same position as the color bar chart (the standard picture frame).

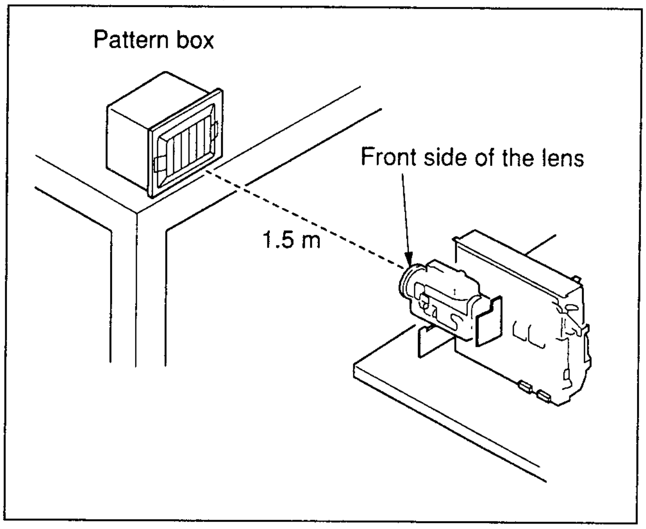

Pattern box
Front side of the lens
1.5 m

Fig. 4-1-1

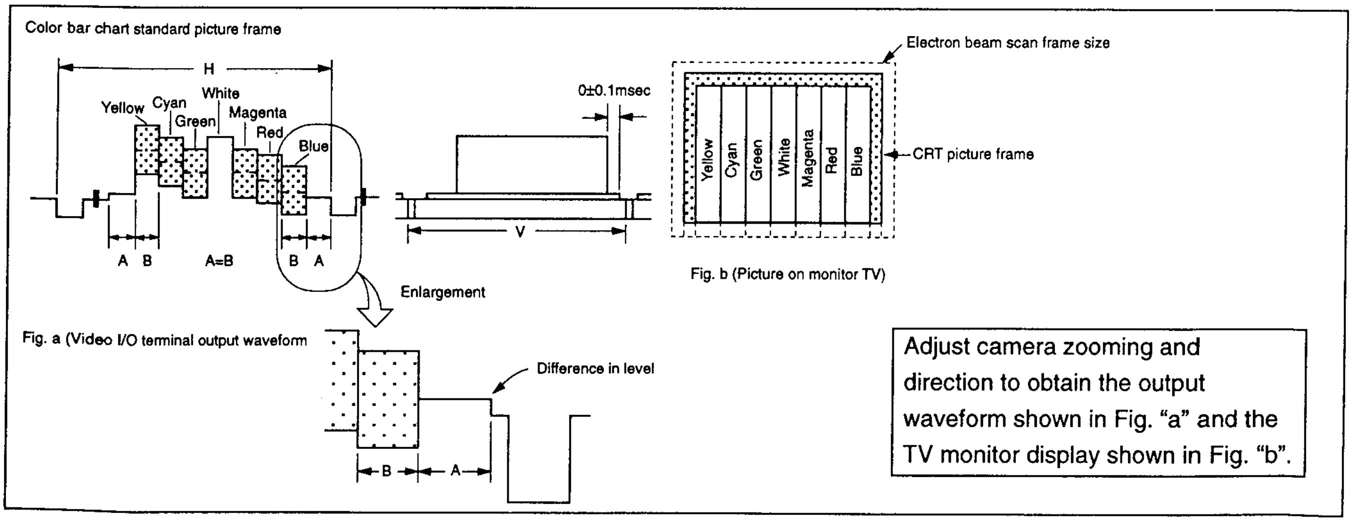

Color bar chart standard picture frame
H
Yellow
Cyan
Green
White
Magenta
Red
Blue
A
B
A=B
B
A
Enlargement
0±0.1msec
V
Electron beam scan frame size
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame
Difference in level
B
A

Fig. a (Video I/O terminal output waveform

Fig. b (Picture on monitor TV)

Adjust camera zooming and direction to obtain the output waveform shown in Fig. "a" and the TV monitor display shown in Fig. "b".

Fig 4-1-2

4) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189 mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 4-1-3.

Note : Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

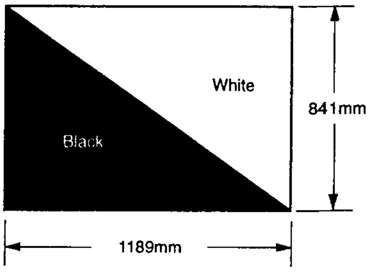

White
Black
841mm
1189mm

Fig 4-1-3

2-2. Page F data modofication

All the data of page F are automatically initialized if the initialization is executed. However, among the initialized data, the following addresses require manual modification of data after the page F data is initialized.

*CND : Canadian model

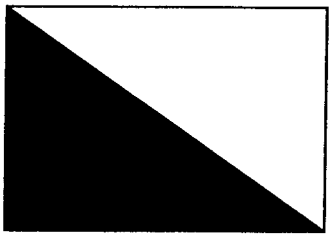
Modification procedure:

Order	Page	Address	Data					Procedure
			TRV12/12PK/112		TRV12E	TRV22/212	TRV10E	
			US, CND	OTHER				
1	6	00	01					After setting the data, Press the PAUSE button. (Preparation)
2	F	03	22	23	24	22	24	Set each data to each address, and press the PAUSE button.
		04	58		58	68	10	
		05	E1		E1	E1	E1	
		06	18		18	18	18	
		07	06		06	07	—	
		08	C4		D4	24	14	
		17	B9		—	B9	—	
		19	53		—	53	—	
		1A	7D		—	7D	—	
		1E	8D		—	8D	—	
		1F	9E		—	9E	—	
		20	8E		—	8E	—	
		21	85		—	85	—	
		2C	—		08	—	08	
		31	FB		—	FC	—	
		32	F4		—	F4	—	
		44	96		—	—	—	
		45	96		66	96	66	
		46	—		—	68	48	
		47	95		—	—	—	
		48	—		—	95	—	
		49	77		—	77	—	
		4B	77		—	77	—	
		4D	76		—	76	—	
		4F	76		—	76	—	
		53	A8		AD	A8	AD	
		54	AF		AF	AF	AF	
		5A	7A		—	7A	—	
		5C	1B		—	17	—	
		5D	34		—	32	—	
		5E	24		24	—	24	
		60	—		—	15	—	
		61	A7		A5	BA	A4	
		62	—		—	C3	—	
		63	B3		82	B2	85	
		64	38		36	1E	—	
		65	—		—	00	—	
		67	05		—	01	—	
		68	—		—	6B	—	
		6B	—		—	6C	—	
		6C	—		—	5C	—	
		72	—		—	20	—	
		74	—		—	3C	—	
		76	00		—	00	—	
		78	E8		—	E0	—	
		79	30		—	30	—	
		7A	10		—	10	—	
		7D	26		64	26	64	
		87	—		—	1F	—	
		88	—		—	20	—	
		89	82	B2	82	82	—	
		8B	—		D0	—	D0	
		E4-EF	00		00	00	00	
		F5	A8		A8	A8	A8	
		F6	5E		5E	5E	5E	
		F7	CC		C0	C6	94	

2-3. Flange back adjustment

Purpose: Automatic flange back adjustment of inner focus lens.

Adjustment error: Loss of focus when switched between auto focus and manual focus.



(Chart for flange back adjustment)
(See Page 6-2)

Subject	Chart for flange back adjustment (Placed 2000 ±5 mm in front of the lens with illumination of 300 ±50 lux.)
Measurement Point	Confirm the focus on monitor TV.
Measuring Instrument	Confirm focus on monitor TV
Adjustment Page	F
Adjustment Address	3C 3D 3E 3F 40 41 42

Note : Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(EXCEPT CCD-TRV10E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Check that the center of the flange back adjustment chart coincides with that of the display on the monitor at both ends: TELE end and the WIDE end of the zoom lens.
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3				Confirm that the data at page F, address 1B is the initial value, referring to the "Page F address list".
4	6	11		Confirm that the data is 00.
5	6	42	02	After setting the data, press the PAUSE button.
6	6	43	01	After setting the data, press the PAUSE button.
7	6	01	13	After setting the data, press the PAUSE button.
8	6	01	15	After setting the data, press the PAUSE button. The adjustment data is automatically input to page: F, addresses: 3C to 42.
9	6	11		Confirm that the data is 01.

Processing after Adjustments:

Order	Procedure
1	Turn the main power supply (7.2 V) OFF, then ON. (If this step is not performed, the camera will be out of focus.)

- For the flange back check, refer to the Service Manual for CCD-TRV11/TRV11E/TRV21/TRV21E/TRV21PK. (SEE PAGE 6-17)

2-3. Camera-shaking correction adjustment [CCD-TRV22/TRV212 MODEL]

The "Camera-shaking correction adjustment" is necessary only when the angular speed sensor is replaced. If microprocessors or circuit is replaced or repaired, this adjustment is not necessary. Make operation check only.

Subject	
Measurement Point	VIDEO output terminal (Terminated in 75Ω)
Measuring Instrument	Oscilloscope or TV monitor
Adjustment Page	F
Adjustment Address	42 43
Specification Value	Horizontal residual vibration ≦0.5μsec Vertical residual vibration ≦0.2msec

Note 1: Caution when replacing parts

The two types of parts: ENC05EA and ENC05EB are supplied. Use the same type of sensor as that of the defective sensor. If different type of either ENC05EA or ENC05EB is used, picture can vibrate vertically or horizontally during camera-shake correction. After replacement, make adjustment as described.

Note 2: Caution on angular speed sensor

The angular speed sensor has high precision vibrator inside. If the sensor is dropped, balance of the vibrator is lost resulting in faulty operation. Handle the sensor carefully.

Adjustment procedure:

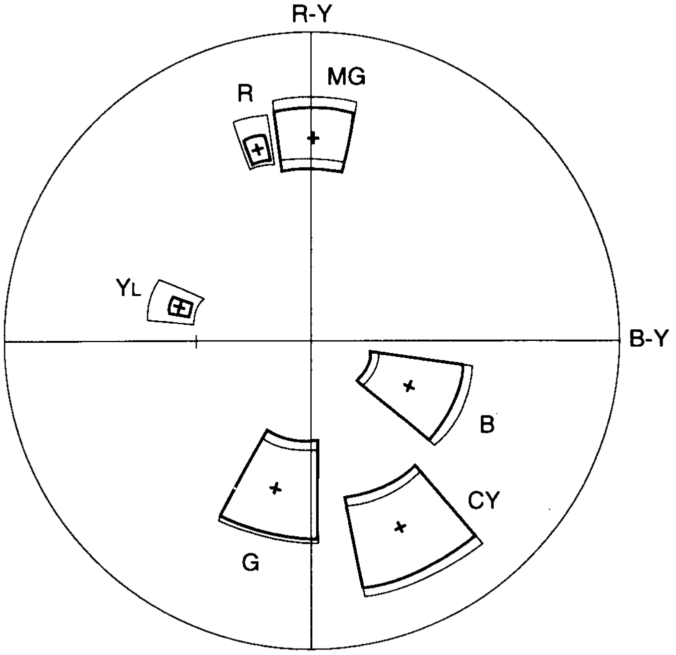
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	42	07	After setting the data, press the PAUSE button.
3	6	01	3F	After setting the data, press the PAUSE button.
4				Obtain the vertical data from the following equation using the value indicated on SE650 of the TZ-5 board as the sensor sensitivity value. (Result of calculation must be converted to hexadecimal value.) $[\text{Vertical data}]\ \text{Hex}=\frac{148\text{d}}{\text{sensor sensitivity value}}\times[\text{Hex}]$
5	F	42		Set the [Vertical data] Hex value to the page F, address 42 and press the PAUSE button.
6				Obtain the horizontal data from the following equation using the value indicated on SE651 of the TZ-5 board as the sensor sensitivity value. (Result of calculation must be converted to hexadecimal value.) $[\text{Horizontal data}]\ \text{Hex}=\frac{121\text{d}}{\text{sensor sensitivity value}}\times[\text{Hex}]$
7	F	43		Set the [Horizontal data] Hex value to the page F, address 43 and press the PAUSE button.
8				Confirm that "Camera-shaking correction adjustment" works correctly.
9	6	00	00	After setting the data, press the PAUSE button. (End)
10	6	42	00	After setting the data, press the PAUSE button.
11	6	01	00	After setting the data, press the PAUSE button.

Note : Phase of the residual vibration must be in the same phase as that while no correction is applied.

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT (CCD-TRV12/TRV12PK/TRV112) (NTSC)

⊞ : WEIGHT OFF MODE
☐ : WEIGHT ON MODE

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

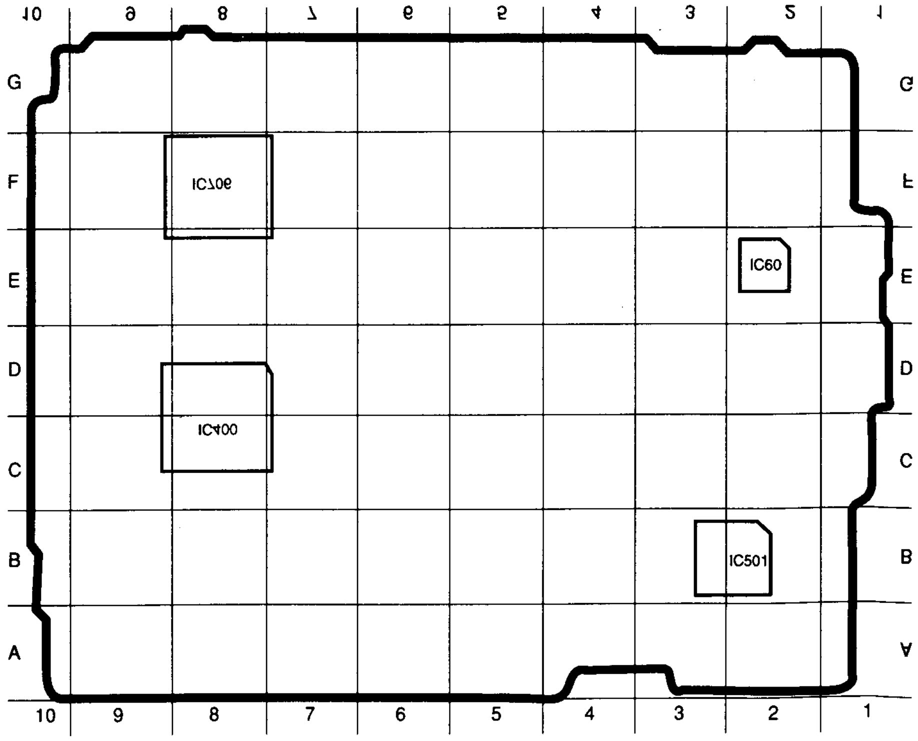

R-Y
MG
R
YL
B-Y
B
CY
G

CCD-TRV12/TRV12PK/TRV112

〈PARTS REFERENCE SHEET〉

You can find the parts position of mount locations applying to VC-167 board of a set.

VC-167 TRV12/TRV12PK/TR112 SIDE A

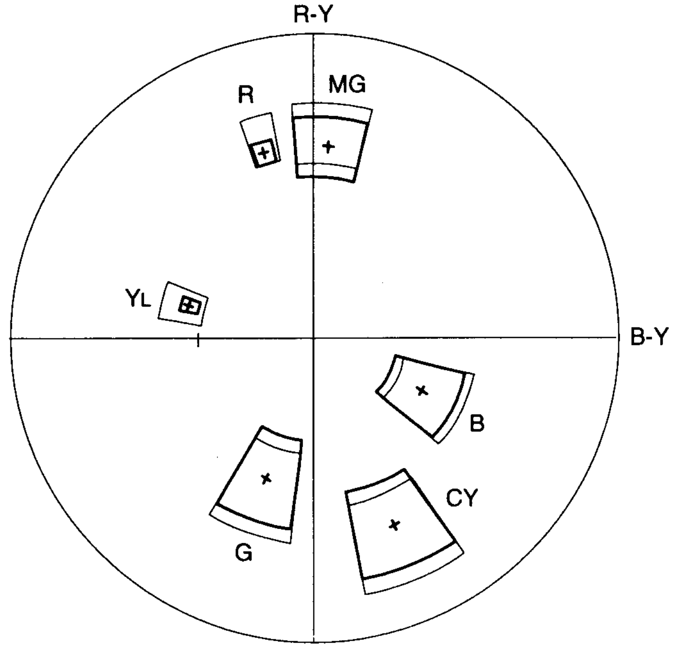

10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC60
IC400
IC501

SIDE B CCD-TRV12/TRV12PK/TRV112 VC-167

FOR CAMERA COLOR PEPRODUCTION ADJUSTMENT (CCD-TRV22/TRV212) (NTSC)

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

⊞ : WEIGHT OFF MODE
☐ : WEIGHT ON MODE



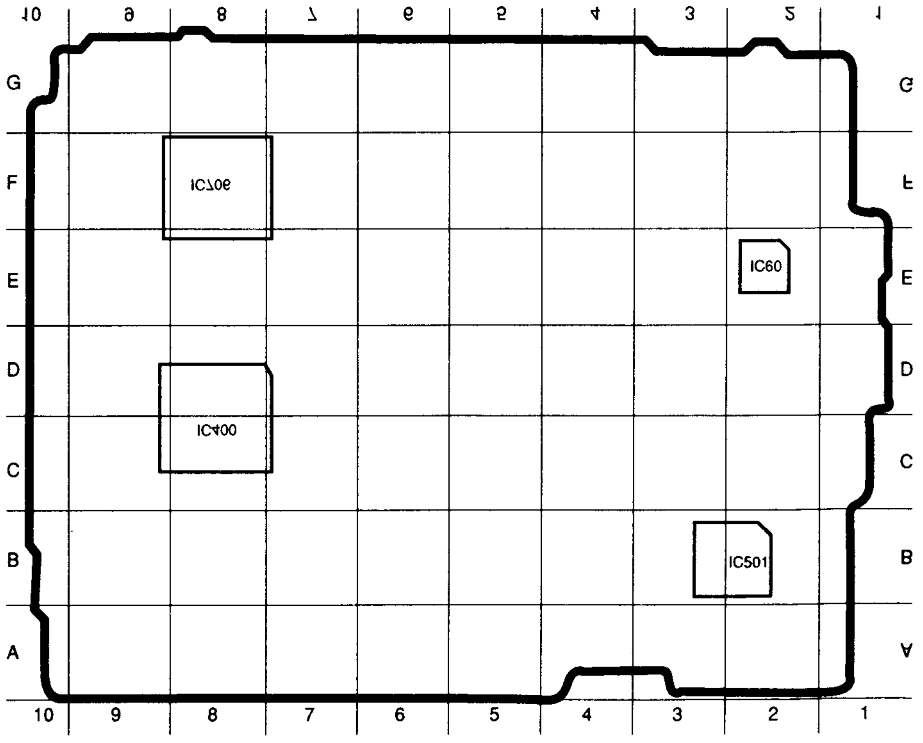
R-Y
B-Y
R
MG
YL
B
CY
G

CCD-TRV22/TRV212

〈PARTS REFERENCE SHEET〉

You can find the parts position of mount locations applying to VC-167 board of a set.

VC-167 TRV22/TRV212 SIDE A



10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC400
IC60
IC501

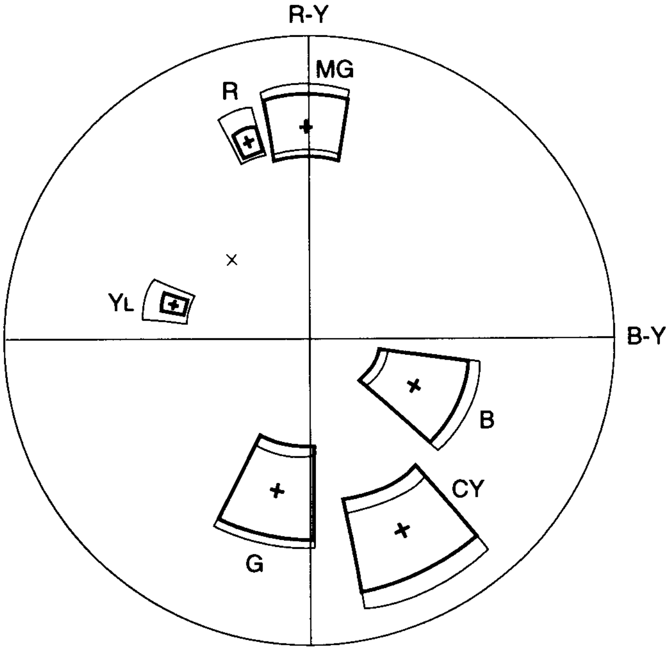
SIDE B CCD-TRV22/TRV212 VC-167

FOR CAMERA COLOR PEPRODUCTION ADJUSTMENT (CCD-TRV10E/TRV12E) (PAL)

⊞ : WEIGHT OFF MODE

☐ : WEIGHT ON MODE

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

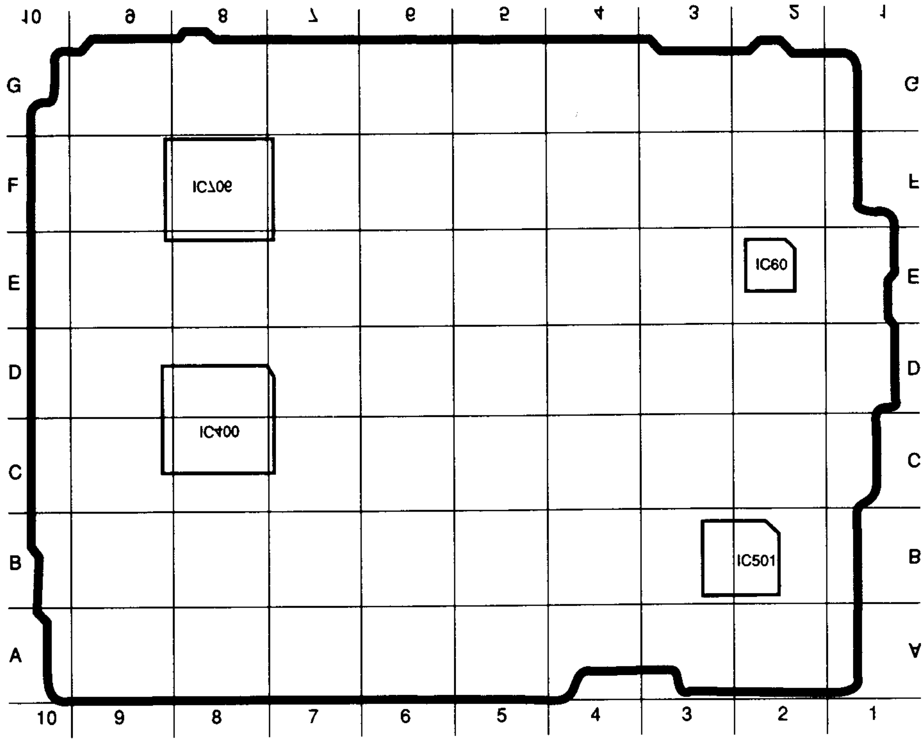

R-Y
MG
R
YL
B-Y
B
CY
G

CCD- TRV10E/TRV12E

〈PARTS REFERENCE SHEET〉

You can find the parts position of mount locations applying to VC-167P board of a set.

VC-167P TRV10E/TRV12E SIDE A


10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC60
IC400
IC501

SIDE B CCD-TRV10E/TRV12E VC-167P

CCD-TRV11/TRV11E/
TRV21/TRV21E/TRV21PK
RMT-713

SERVICE MANUAL

US Model
Canadian Model
CCD-TRV11/TRV21
AEP Model
UK Model
CCD-TRV11E/TRV21E
E Model
CCD-TRV11/TRV11E/TRV21/
TRV21E/TRV21PK
Australian Model
CCD-TRV11E
Hong Kong Model
CCD-TRV11/TRV11E
Tourist Model
CCD-TRV21/TRV21E

Video8 Handycam

B MECHANISM

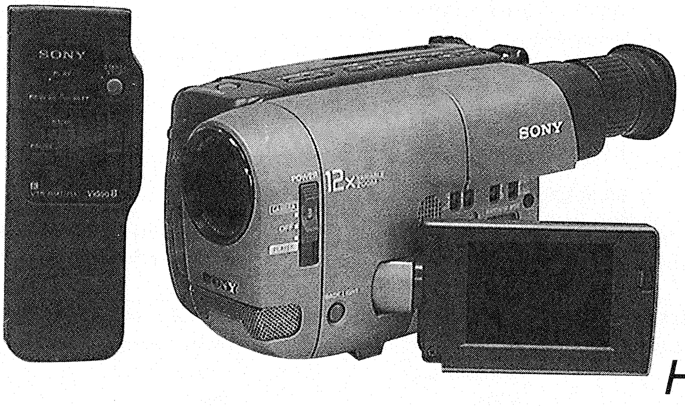


PHOTO : CCD-TRV11E

- CCD-TRV21PK is model that carring bag are added in CCD-TRV21.
- CCD-TRV21PK is different from CCD-TRV21 only in the accessory and packing materials.

For MECHANISM ADJUSTMENT, refer to the "8mm Video MECHANICAL ADJUSTMENT MANUAL Ⅶ " (9-973-801-11).

SPECIFICATIONS

Video camera recorder

System

Video recording system
Two rotary heads, Helical scanning, FM system

Audio recording system
Rotary heads, FM system

Usable cassette
8 mm video format cassette (standard 8 mm)

Image device
CCD (Charge Coupled Device)

Viewfinder
Electronic viewfinder
Black and white

Lens
12x, Combined power zoom lens, F1.8–2.7
Filter diameter 37 mm (1 ½ inches)

Color temperature
Auto

Recommended illumination
More than 100 lx

* Minimum illumination expresses the light level a camcorder requires to produce a picture. Visible minimum low light expresses the light level to produce a visible signal.

LCD screen

Picture
2.5 inches measured diagonally
50.3 x 37.4 mm
(2 x 1½ inches)

On-screen display
TN LCD/TFT active matrix method

Total dot number
61,380 (279 x 220)

Input and Output connectors

Video output
Phono jack, 1 Vp-p, 75 Ω, unbalanced

Audio output
Monaural, Phono jack, 327 mV, (at load impedance 47 kΩ), impedance less than 2.2 kΩ

RFU DC OUT
Special minijack, DC 5 V

Earphone jack
Mini-jack

LANC control jack
Stereo mini-minijack (ø 2.5 mm)

MIC jack
Minijack, 0.388 mV, low impedance with 2.5 to 3 V DC output, impedance 6.8 kΩ (ø 3.5 mm)

Speaker
Dynamic-speaker

General

Power requirements
7.5 V (AC power adaptor)

Operating temperature
0°C to 40°C (32°F to 104°F)

Storage temperature
–20°C to +60°C (–4°F to +140°F)

Dimensions (Approx.)
113 x 106 x 210 mm
(4 ½ x 4 ¼ x 8 ⅜ inches) (w/h/d)

Microphone
Electret condenser microphone, monaural type

AC power adaptor

Power requirements
110 – 240 V AC, 50/60Hz

Power consumption
AC-V15: 18 W
AC-V16: 20 W
AC-V16A: 22 W

Output voltage
DC OUT in operation mode
AC-V15: 7.5 V, 1.6 A
AC-V16/V16A: 7.5 V, 1.8 A
Battery charge terminal
10 V, 1.1 A in charge mode

Application
Sony battery packs NP-55 (supplied), NP-55H, NP-C65, NP-67, NP-77H, NP-77HD, NP-98, NP-98D

Operating temperature
0°C to 40°C (32°F to 104°F)

Storage temperature
–20°C to +60°C (–4°F to +140°F)

Dimensions (Approx.)
166 x 43 x 75 mm (6 ⅝ x 1 ¹¹⁄₁₆ x 3 inches) (w/h/d)
including projecting parts and controls

Mass (Approx.)
AC-V15/V16: 420 g (15 oz)
AC-V16A: 450 g (16 oz)

* Refer to the table on page 2 for the differences of specifications between the respective models.

MICROFILM

8 VIDEO CAMERA RECORDER

SONY®

Model	CCD-TRV11	CCD-TRV11E	CCD-TRV21	CCD-TRV21E
Video signal	NTSC color,EIA standards	PAL color,CCIR standards	NTSC color,EIA standards	PAL color,CCIR standards
Recording/playback time	SP mode:2 hours(P6-120) LP mode:4 hours(P6-120)	SP mode:1 hours and 30minutes (P5-90) LP mode:3 hours(P5-90)	SP mode:2 hours(P6-120) LP mode:4 hours(P6-120)	SP mode:1 hours and 30minutes (P5-90) LP mode:3 hours(P5-90)
Fastforward/ rewind time	Approx.5min.(P6-120)	Approx.5min.(P5-90)	Approx.5min.(P6-120)	Approx.5min.(P5-90)
Focal distance	7/32-2 5/8 inches (5.4-64.8mm) When converted to a 35mm still camera 1 9/16-18 1/2 inches (39-468mm)		7/32-2 5/8 inches (5.4-64.8mm) When converted to a 35mm still camera 1 7/8-22 1/4 inches (47-564mm)	
Minimum illumination	0.8 lx at F 1.8 (Visidle minimum low light 0.4 lx)		3 lx at F 1.8	4 lx at F 1.8
Illumination range	0.8 to 100,000 lx		4 to 100,000 lx	
Average power consumption	4.7W during camera recording using the LCD 3.6W during camera recording using the viewfinder		5.1W during camera recording using the LCD 4.0W during camera recording using the viewfinde	
Mass(Approx.)	Excluding the battery pack, lithium battery, cassette and shoulder strap 850g Including the battery pack NP-55,lithium battery CR2025,cassette P6-120 and shoulder strap 1.1kg	Excluding the battery pack, lithium battery, cassette and shoulder strap 850g Including the battery pack NP-55,lithium battery CR2025,cassette P5-90 and shoulder strap 1.1kg	Excluding the battery pack, lithium battery, cassette and shoulder strap 860g Including the battery pack NP-55,lithium battery CR2025,cassette P6-120 and shoulder strap 1.1kg	Excluding the battery pack, lithium battery, cassette and shoulder strap 860g Including the battery pack NP-55,lithium battery CR2025,cassette P5-90 and shoulder strap 1.1kg

Table for difference of functions

Model	TRV11 (NTSC)	TRV11E (PAL)	TRV21 (NTSC)	TRV21E (PAL)
Digital zoom	×		○ (24×) E/JE : (48×)	
Steady shot	×		○	
Wide mode	×		○ US/CND : ×	

abbreviation

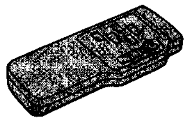
JE : Tourist model

CND : Canadian model

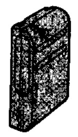
Checking supplied accessories

Check that the following accessories are supplied with your camcorder.

1

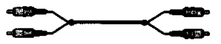


2

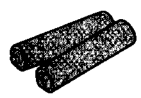


3

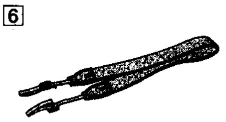
4



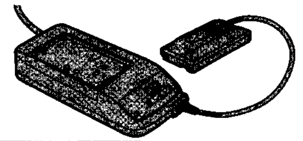
5



6



7



1 **Wireless Remote Commander (1)**

2 **NP-55 Battery Pack (1)**

3 **CR2025 Lithium Battery (1)**
Already installed in the camcorder.

4 **A/V connecting cable (1)**

5 **R6 (size AA) battery for Remote Commander (2)**

6 **Shoulder strap (1)**

7 **AC-V15/V16/V16A AC power adaptor (1)**

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replace-ment.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
   - Keep the temperature of the soldering iron around 270°C during repairing.
   - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
   - Be careful not to apply force on the conductor when soldering or unsoldering.

TABLE OF CONTENTS

SERVICE NOTE ······ 6

1. GENERAL

Getting Started
- Inserting a Cassette ······ 1-2

Basic Operations
- Camera Recording ······ 1-2
- Hints for Better Shooting ······ 1-6
- Checking the Recorded Picture ······ 1-7
- Playing back a Tape ······ 1-8
- Searching for the end of the Picture ······ 1-9

Advanced Operations
- Using Alternative Power Sources ······ 1-9
- Letting the Subject Monitor the Shot ······ 1-10
- Recording with the Date or Time ······ 1-11
- Shooting with Backlighting ······ 1-12
- Using the PROGRAM AE function ······ 1-12
- Selecting the START/STOP Mode ······ 1-13
- Superimposing a Title ······ 1-14
- Using the Wide Mode Function ······ 1-14
- Using the STEADY SHOT function ······ 1-15
- Changing the Mode Settings ······ 1-15
- Watching on a TV Screen ······ 1-16
- Editing onto Another Tape ······ 1-17

Additional Information
- Changing the Lithium Battery in the Camcorder ······ 1-17
- Resetting the Date and Time ······ 1-18
- Playback Modes ······ 1-19
- Tips for Using the Battery Pack ······ 1-19
- Maintenance Information and Precautions ······ 1-21
- Using Your Camcorder Abroad ······ 1-23
- Identifying the Parts ······ 1-24
- Warning Indicators ······ 1-28
- Checking Supplied Accessories ······ 1-29
- Charging and Installing the Battery Pack ······ 1-29

2. DISASSEMBLY

2-1. REMOVAL OF MA-266 BOARD and MICROPHONE ······ 2-1
2-2. REMOVAL OF CABINET ASSY ······ 2-1
2-3. REMOVAL OF CASSETTE LID ASSY, LS LID, JK-146 and TZ-5 BOARD ······ 2-2
2-4. REMOVAL OF DD-80 BOARD ······ 2-2
2-5. REMOVAL OF ZOOM LENS, CD-147 BOARD and CN-98 BOARD ······ 2-3
2-6. REMOVAL OF VC-167 BOARD ······ 2-3
2-7. REMOVAL OF CF-42 BOARD ······ 2-4
2-8. REMOVAL OF EVF BLOCK ASSY ······ 2-5
2-9. REMOVAL OF VF-102 ······ 2-5
2-10. REMOVAL OF P CABINET, SD-21 BOARD and PD-67 BOARD ······ 2-6
2-11. INTERNAL VIEWS ······ 2-7
2-12. CIRCUIT BOARDS LOCATION ······ 2-8

3. BLOCK DIAGRAMS

3-1. OVERALL BLOCK DIAGRAM ······ 3-1
3-2. CAMERA BLOCK DIAGRAM ······ 3-4
3-3. VIDEO/AUDIO BLOCK DIAGRAM ······ 3-7
3-4. SYSTEM CONTROL BLOCK DIAGRAM ······ 3-9
3-5. SERVO BLOCK DIAGRAM ······ 3-11
3-6. MODE CONTROL BLOCK DIAGRAM ······ 3-15
3-7. LCD/EVF BLOCK DIAGRAM ······ 3-17
3-8. POWER BLOCK DIAGRAM ······ 3-21

4. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM ······ 4-1
4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS ······ 4-4
- VC-167(MAIN), CN-98 (TRANSLATION) PRINTED WIRING BOARD ······ 4-7
- VC-167(CAMERA 1), CD-147(CCD IMAGER), CN-98 (TRANSLATION) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS ······ 4-11
- VC-167(CAMERA 2)SCHEMATIC DIAGRAM ······ 4-15
- VC-167(CAMERA 3)SCHEMATIC DIAGRAM ······ 4-18
- VC-167(VIDEO 1)SCHEMATIC DIAGRAM ······ 4-21
- VC-167(VIDEO 2), JK-146(JACK) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS ······ 4-24
- VC-167(MODE CONTROL), FP-249(MODE SENSOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS ······ 4-27
- VC-167(AUDIO AMP), MA-266(AUDIO) SCHEMATIC DIAGRAMS ······ 4-30
- MA-266(AUDIO)PRINTED WIRING BOARD ······ 4-33
- DD-80(POWER)PRINTED WIRING BOARD ······ 4-35
- DD-80(POWER), VC-167(VTR SWITCH) SCHEMATIC DIAGRAMS ······ 4-37
- CF-42(SYSTEM CONTROL) PRINTED WIRING BOARDS ······ 4-40
- CF-42(SYSTEM CONTROL), SCHEMATIC DIAGRAMS ······ 4-43
- VF-102(EVF) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ······ 4-47
- TZ-5(STEADY SHOT) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ······ 4-51
- PD-67(LCD) SCHEMATIC DIAGRAM ······ 4-55
- PD-67(LCD) PRINTED WIRING BOARD ······ 4-59
- SD-21(R.G.B DECODER) SCHEMATIC DIAGRAMS ······ 4-62
- SD-21(R.G.B DECODER) PRINTED WIRING BOARD ······ 4-65

5. REPAIR PARTS LIST

5-1. EXPLODED VIEWS ······ 5-1
- 5-1-1. OVERALL SECTION ······ 5-1
- 5-1-2. CABINET(L), F PANEL SECTION ······ 5-2
- 5-1-3. CABINET(R) SECTION ······ 5-3
- 5-1-4 EVF SECTION ······ 5-4
- 5-1-5. MAIN SECTION ······ 5-5
- 5-1-6. CASSETTE COMPARTMENT BLOCK SECTION ······ 5-6
- 5-1-7. LS CHASSIS BLOCK SECTION ······ 5-7
- 5-1-8. MECHANISM CHASSIS BLOCK SECTION 5-8

5-2. ELECTRICAL PARTS LIST ······ 5-9

6. ADJUSTMENTS

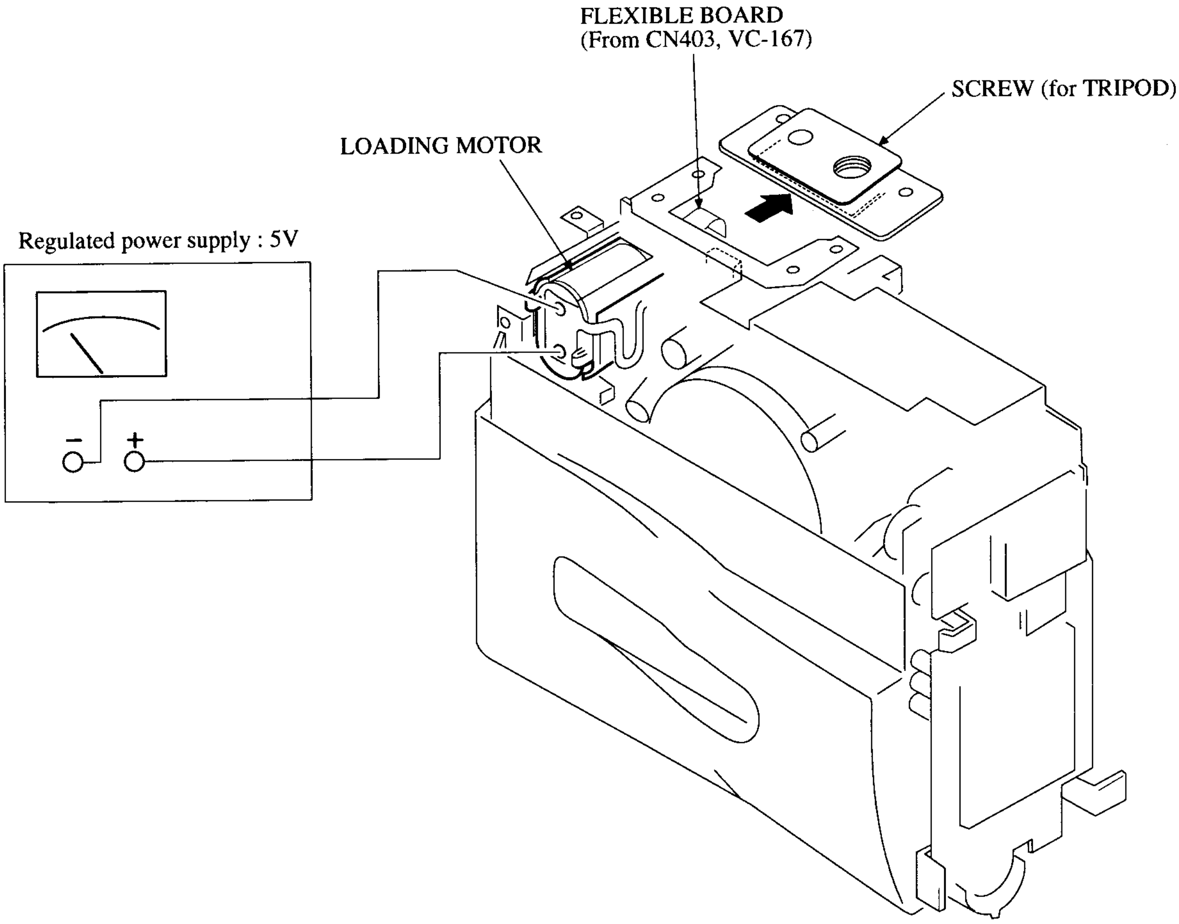
6-1. CAMERA SECTION ADJUSTMENT ················6-1
  1-1. PREPARATIONS BEFORE ADJUSTMENT ···6-1
    1-1-1. List of service tools ································6-1
    1-1-2. Precautions ··6-2
      1. Switch settings ·······································6-2
      2. Adjustment sequence ·······························6-2
      3. Subject ··6-2
    1-1-3. Preparations ···6-3
    1-1-4. Adjustment remote commander (RM-95 upgraded) ·································6-4
      1. Using the adjustment remote commander ······6-4
      2. Precautions when using the adjustment remote commander ···6-5
  1-2. CAMERA SYSTEM ADJUSTMENTS············6-8
    1. Adjustment points when major parts have been replaced ···6-8
    2. Power supply voltage check (VC-167 board) ···6-8
    3. Preparation for adjustment ·······················6-8
    4. Initialization of page F data ·······················6-9
    5. V SUB adjustment ··································6-10
    6. VRG adjustment ·······································6-10
    7. Page F data modification ··························6-11
    8. 28MHz crystal oscillator adjustment ············6-12
    9. HALL adjustment ·····································6-14
    10. Flange back adjustment ·························6-16
    11. Flange back check ··································6-17
    12. Picture frame setting ·····························6-18
    13. Color reproduction adjustment ··················6-19
    14. IRIS IN/OUT adjustment···························6-20
    15. MAX gain adjustment ·······························6-21
    16. Auto white balance reference data input ·········6-22
    17. Auto white balance adjustment ·················6-23
    18. White balance check ······························6-24
    19. Camera-shaking correction adjustment ·········6-25
    20. Electronic viewfinder system adjustments (VF-102 board) ·······································6-26
      20-1. Power supply voltage check ····················6-26
      20-2. Horizontal and vertical position ·················6-26
      20-3. BRIGHT adjustment ······························6-26
      20-4. Centering adjustment ······························6-27
      20-5. Focus adjustment ····································6-27
      20-6. Diffraction adjustment·······························6-27
    21. LCD system adjustments (PD-67 board)·········6-28
      21-1. EVR initial data input ·····························6-28
      21-2. -7.5V adjustment ·····································6-29
      21-3. BRIGHT adjustment ······························6-29
      21-4. CONTRAST adjustment ··························6-30
      21-5. COLOR adjustment ································6-31
      21-6. HUE adjustment (CCD-TRV11/TRV21) ························6-32
      21-7. BURST CLEANING adjustment (CCD-TRV11E/TRV21E) ·······················6-32
      21-8. V.COM adjustment ··································6-33
      21-9. White balance preset adjustment(1)···············6-34
      21-10. White balance preset adjustment(2) ············6-35
      21-11. White balance adjustment ·······················6-36
      21-12. VCO adjustment ···································6-36
      21-13. Horizontal display position adjustment ·········6-37

6-2. MECHANISM SECTION ADJUSTMENTS ·········6-41
  2-1. HOW TO OPERATE THE MECHANISM AFTER THE CASSETTE COMPARTMENT IS REMOVED ·······································6-41
    1. How to load a cassette tape:·······················6-41
    2. How to establish RECORD mode: ················6-41
    3. How to eject a cassette tape: ····················6-41
    4. Processing after operation ························6-41
  2-2. TAPE PATH ADJUSTMENT ····················6-42
    1. Preparations for adjustments ····················6-42
6-3. VIDEO SECTION ADJUSTMENT····················6-43
  3-1. PREPARATIONS BEFORE ADJUSTMENT ···6-44
    3-1-1. Equipment required ·································6-44
    3-1-2. Precautions on adjustment ·······················6-44
    3-1-3. Adjustment connector (VC-167 Board CN102) ·······················6-44
    3-1-4. Equipment connection ·····························6-45
    3-1-5. Alignment tape···6-45
    3-1-6. Output level and impedance ····················6-46
  3-2. ADJUSTMENT POINTS WHEN MAJOR PARTS ARE REPLACED ·································6-47
    1. When drum is replaced: ··························6-47
  3-3. POWER SUPPLY SYSTEM ADJUSTMENT ···6-47
    1. Power supply voltage check (VC-167 board) ···6-47
    2. VTR & CAM mode ON ·························6-48
    3. EMG code (Emergency code) ····················6-49
    4. MSW code ··6-49
    5. Bit value discrimination ··························6-50
    6. Initializing the emergency code area ···········6-51
    7. LED check ··6-51
    8. Key input check ·····································6-52
    9. Key input check (A/D port) ·······················6-52
    10. Individual operation of drum, capstan and loading motor ·····································6-53
  3-4. SERVO SYSTEM ADJUSTMENTS················6-54
    1. SYNC level and BURST level adjustments ···6-54
    2. Switching position adjustment·····················6-55
    3. Capstan FG offset adjustment ····················6-56
  3-5. PLAYBACK FREQUENCY RESPONSE CHARACTERISTICS ADJUSTMENT ········6-57
  3-6. DEMD OUT LEVEL ADJUSTMENT ···········6-58
  3-7. YD OUT LEVEL ADJUSTMENT ···············6-59
  3-8. PB CHROMA LEVEL CHECK ·················6-60
  3-9. PB Y OUT LEVEL ADJUSTMENT···············6-61
  3-10. FE OSC CHECK ···································6-62
  3-11. EMPHASIS INPUT LEVEL ADJUSTMENT ···6-63
  3-12. Y FM DEVIATION ADJUSTMENT ···········6-64
  3-13. Y FM CARRIER FREQUENCY ADJUSTMENT ·······································6-65
  3-14. CHROMA EMPHASIS fo ADJUSTMENT ······6-66
  3-15. REC Y LEVEL ADJUSTMENT ·················6-67
  3-16. REC L LEVEL ADJUSTMENT ·················6-68
  3-17. REC C LEVEL ADJUSTMENT ·················6-69
6-4. AUDIO SYSTEM ADJUSTMENT ·····················6-70
  4-1. EE-OUTPUT LEVEL CHECK ······················6-70
  4-2. 1.5MHz DEVIATION ADJUSTMENT ·········6-71
  4-3. BPF fo ADJUSTMENT······························6-72
  4-4. OVERALL SIGNAL LEVEL AND DISTORTION CHECK ·····························6-73
  4-5. OVERALL NOISE LEVEL CHECK ···········6-73

※ The color reproduction frame is shown after the page of ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS.

SERVICE NOTE

NOTE : To eject a cassette from the camcorder without turning on the main power, firstly remove the SCREW (for TRIPOD), then remove the FLEXIBLE BOARD as shown, and finally connect the regulated power supply ; +5V to the loading motor, this is to protect the main circuit from damage.


FLEXIBLE BOARD
(From CN403, VC-167)
SCREW (for TRIPOD)
LOADING MOTOR
Regulated power supply : 5V
–
+

SECTION 1
GENERAL

This section is extracted from instruction manual. NTSC Model (CCD-TRV11/TRV21)

Charging and installing the battery pack

Carga y fijación de la batería

Battery life

CCD-TRV11

Battery pack	While recording[1]		While playing back on LCD[3]
	LCD open[2]	LCD close	
NP-55 (supplied)	75 (40)	95 (55)	75
NP-55H	85 (45)	110 (60)	85
NP-C65/67	120 (65)	155 (85)	115
NP-66	110 (60)	150 (85)	110
NP-77H/77HD	185 (100)	235 (130)	180
NP-98/98D	225 (120)	305 (170)	225

CCD-TRV21

Battery pack	While recording[1]		While playing back on LCD[3]
	LCD open[2]	LCD close	
NP-55 (supplied)	70 (35)	85 (50)	70
NP-55H	80 (40)	100 (55)	85
NP-C65/67	105 (55)	145 (80)	100
NP-66	100 (50)	135 (75)	105
NP-77H/77HD	170 (90)	215 (120)	180
NP-98/98D	210 (110)	275 (155)	220

[1] Approximate continuous recording time indoors is indicated outside of parentheses. Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off are indicated in parentheses. The actual battery life may be shorter.

[2] Approximate minutes when using the LCD screen. When using both the viewfinder and LCD screen, the battery life is shorter.

[3] Approximate continuous playback time indoors.

If the LCD BACK LIGHT switch is set to BRIGHT, the battery life is approximately 10% shorter while the LCD screen is open.

To remove the battery pack

Slide the battery pack in the direction of the arrow.

Duración de la batería

CCD-TRV11

Batería	Videofilmación[1]		Reproducción en la pantalla de cristal líquido[3]
	Pantalla de cristal líquido abierta[2]	Pantalla de cristal líquido cerrada	
NP-55(suministrado)	75 (40)	95 (55)	75
NP-55H	85 (45)	110 (60)	85
NP-C65/67	120 (65)	155 (85)	115
NP-66	110 (60)	150 (85)	110
NP-77H/77HD	185 (100)	235 (130)	180
NP-98/98D	225 (120)	305 (170)	225

CCD-TRV21

Batería	Videofilmación[1]		Reproducción en la pantalla de cristal líquido[3]
	Pantalla de cristal líquido abierta[2]	Pantalla de cristal líquido cerrada	
NP-55(suministrado)	70 (35)	85 (50)	70
NP-55H	80 (40)	100 (55)	85
NP-C65/67	105 (55)	145 (80)	100
NP-66	100 (50)	135 (75)	105
NP-77H/77HD	170 (90)	215 (120)	180
NP-98/98D	210 (110)	275 (155)	220

[1] Minutos aproximados de videofilmación continua en interiores, indicados fuera de paréntesis.
Minutos aproximados cuando videofilme repitiendo el inicio/la parada de la grabación, el zoom y la conexión/desconexión de la alimentación, indicados enfre paréntesis. Es posible que la duración de la batería actual sea más corta.

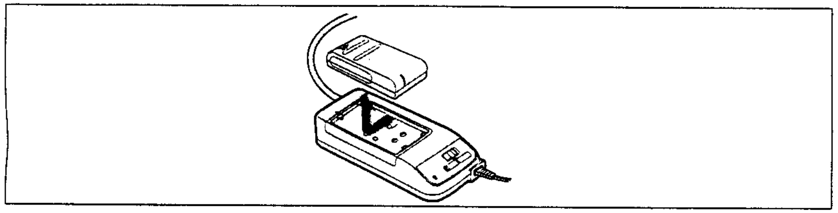
[2] Minutos aproximados cuando utilice la pantalla de cristal líquido. Cuando use el visor y la pantalla de cristal líquido, la duración de la batería será más corta.

[3] Tiempo aproximado de reproducción continua en interiores.

Si el selector LCD BACK LIGHT está en BRIGHT, la duración de la batería será aproximadamente un 10% menor mientras la pantalla de cristal líquido esté abierta.

Para quitar la batería

Deslícela en el sentido de la flecha.



Notes on charging the battery pack

- The POWER lamp will remain lit for a while even if the battery pack is removed and the power cord is unplugged after charging the battery pack. This is normal.
- If the POWER lamp does not light, set the selector to VTR (DC OUT) and disconnect the power cord. After about one minute, reconnect the power cord and set the selector to CHARGE again.
- You cannot operate the camcorder using the AC power adaptor while charging the battery pack.

Installing the battery pack

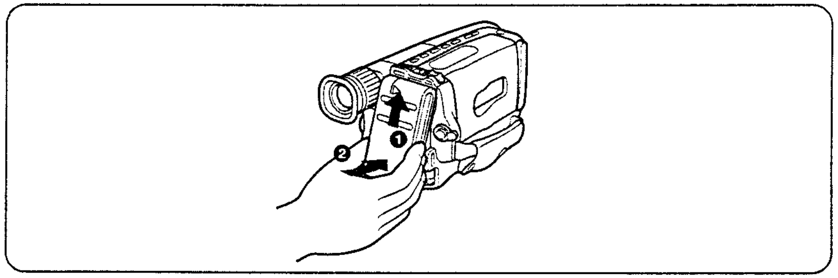
(1) Insert the top of the battery pack into the top of the battery mounting surface.
(2) Push the battery pack so that it attaches firmly.

Notas sobre la carga de la batería

- Es normal que la lámpara POWER permanezca encendida durante un momento después de que haya quitado la batería y desconectado el cable de alimentación de CA cuando finalice la carga.
- Si la lámpara POWER no se enciende, ponga el selector en VTR (DC OUT) y desconecte el cable de alimentación de CA. Después de aproximadamente un minuto, vuelva a conectar el cable y a poner el selector en CHARGE.
- No podrá operar la videocámara empleando el adaptador de alimentación de CA mientras esté cargando la batería.

Fijación de la batería

(1) Inserte la cabeza de la batería en la parte superior de la superficie de montaje.
(2) Empuje la batería de forma que ésta quede firmemente fijada.

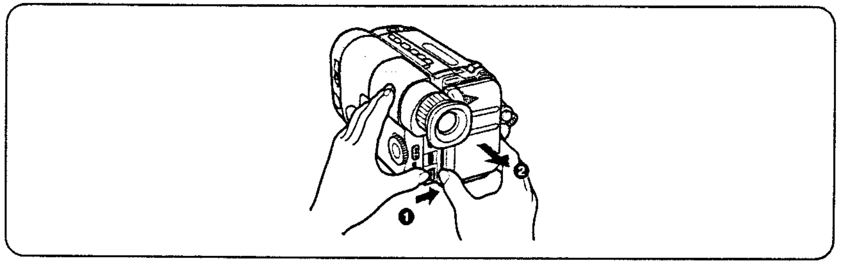


To remove the battery pack

Slide BATT, and then pull the lower part of the battery pack.

Para quitar la batería

Deslice BATT, y después tire de la parte inferior de la batería.

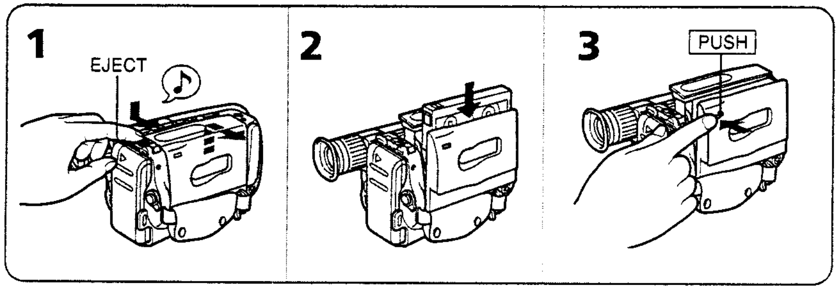


Inserting a cassette

Inserción de un videocassette

Make sure that a power source is installed.
(1) While pressing the small blue button, slide EJECT in the direction of the arrow. The cassette compartment automatically opens.
(2) Insert a cassette (not supplied) with the window facing out.
(3) Press the PUSH mark on the cassette compartment to close it. The cassette compartment automatically closes.

Asegúrese de que haya una fuente de alimentación conectada a la videocámara.
(1) Manteniendo presionado el pequeño botón azul, deslice EJECT en el sentido de la flecha. El compartimiento del videocassette se abrirá automáticamente.
(2) Inserte un videocassette (no suministrado) con la ventanilla hacia afuera.
(3) Presione la marca PUSH del compartimiento del videocassette para cerrarlo. El compartimiento se cerrará automáticamente.



To eject the cassette

While pressing the small blue button, slide EJECT in the direction of the arrow.

To prevent accidental erasure

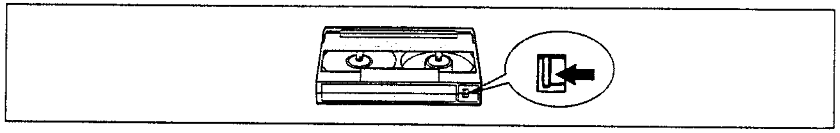
Slide the tab on the cassette to expose the red mark.
If you insert the cassette with the red mark exposed and close the cassette compartment, the beeps sound for a while. If you try to record with the red mark exposed, the 📼 and ⏏ indicators flash in the viewfinder, and you cannot record.
To re-record on this tape, slide the tab back out covering the red mark.

Para expulsar el videocassette

Manteniendo presionado el pequeño botón azul, deslice EJECT en el sentido de la flecha.

Para prevenir el borrado accidental

Deslice la lengüeta del videocassette de forma que la marca roja quede al descubierto.
Si inserta un videocassette con la marca roja al descubierto y cierra el compartimiento del videocassette, sonará un pitido durante un momento. Si intenta grabar con la marca roja al descubierto, en el visor parpadearán los indicadores 📼 y ⏏, y no podrá grabar. Para volver a grabar en esta cinta, deslice la lengüeta de forma que se cubra la marca roja.



Basic operations

Camera recording

Operaciones básicas

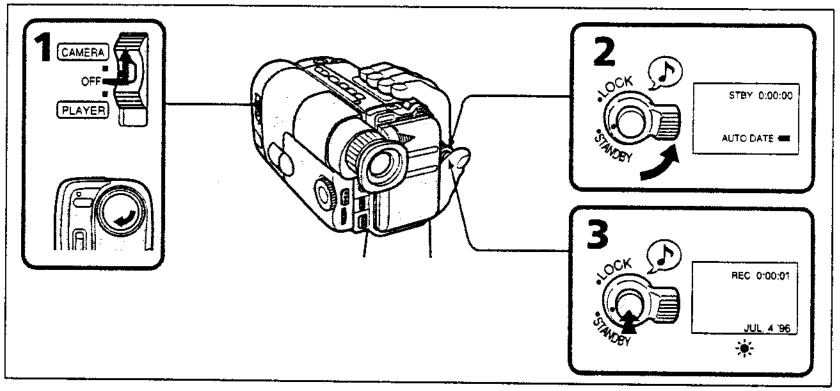
Videofilmación

Make sure that a power source and a cassette is inserted and that the START/STOP MODE switch inside the LCD panel is set to △ .
When you use the camcorder for the first time, power on it and reset the date and time to your time (p. 43) before you start recording. The date is automatically recorded for 10 seconds after you start recording (AUTO DATE feature). This feature works only once a day.
Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.
(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up. The "STBY" indicator appears in the viewfinder.
(3) Press START/STOP. The camcorder starts recording and the "STBY" indicator changes to the "REC" indicator.

You can also select Recording mode, SP (standard play) mode or LP (long play) mode. Set REC MODE (P. 37) according to the length of your planned recording before you start.

Asegúrese de que haya una fuente de alimentación conectada, un videocassette insertado, y de que el selector START/STOP MODE del interior de la pantalla de cristal líquido esté en △ .
Cuando utilice la videocámara por primera vez, conecte la alimentación y reajuste la fecha y la hora actual (pág. 43). Cuando las reajuste, la fecha se grabará automáticamente durante 10 segundos a partir del inicio de la videofilmación [función AUTO DATE (grabación automática de la fecha)]. Esta función sólo trabajará una vez al día.
Antes de realizar videofilmaciones irrepetibles, se recomienda realizar una filmación de prueba a fin de comprobar si la videocámara funciona correctamente.
(1) Manteniendo presionado el pequeño botón verde del selector POWER, deslícelo hasta CAMERA.
(2) Gire STANDBY hacia arriba. En el visor aparecerá el indicador "STBY".
(3) Presione START/STOP. La videocámara comenzará a grabar y el indicador "STBY" cambiará a "REC".

Usted también podrá seleccionar el modo de grabación, modo SP (reproducción estándar) o LP (reproducción larga). Ajuste REC MODE (pág. 37) de acuerdo con la duración de la filmación planeada antes de comenzar.



Camera recording

Videofilmación

To stop recording momentarily [a]

Press START/STOP again. The "REC" indicator in the viewfinder changes to the "STBY" indicator (**Standby mode**).

To finish recording [b]

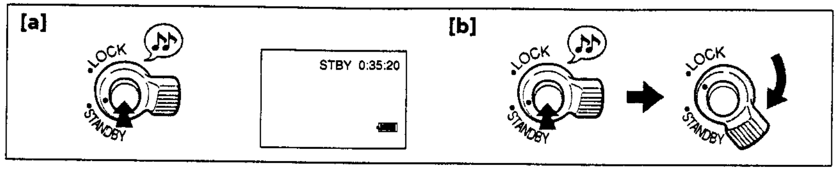
Press START/STOP. Turn STANDBY down, and set the POWER switch to OFF.
Then, eject the cassette and remove the battery pack.

Para detener momentáneamente la grabación [a]

Presione otra vez START/STOP. El indicador "REC" cambiará al indicador "STBY" (**Modo de espera**).

Para finalizar la grabación [b]

Presione START/STOP, gire STANDBY hacia abajo y ponga el selector POWER en OFF. Después extraiga el videocassette y quite la batería.



Note on standby mode

If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn STANDBY down once and turn it up again. To start recording, press START/STOP.

Notes on the recording mode

- This camcorder records and plays back in SP (standard play) mode and in LP (long play) mode.
  The playback quality in LP mode, however, will not be as good as that in SP mode.
- When a tape recorded on this camcorder in LP mode is played back on other types of 8 mm camcorders or VCRs, the playback quality may not be as good as that on this camcorder.

Nota sobre el modo de espera

Si deja la videocámara en el modo de espera durante 5 minutos o más con el videocassette insertado, la videocámara se apagará automáticamente. Esto evitará que la batería y el videocassette se desgasten. Para restablecer el modo de espera, gire una vez STANDBY hacia abajo y después otra vez hacia arriba. Para comenzar a grabar, presione START/STOP.

Notas sobre el modo de grabación

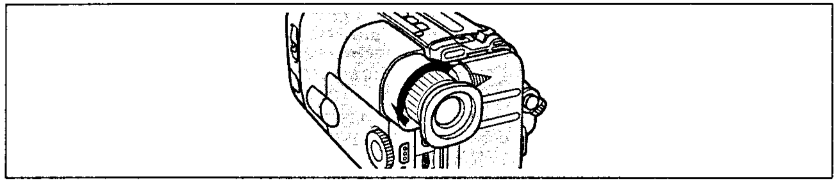
- Esta videocámara graba y repoduce en los modos SP (reproducción estándar) y LP (reproducción larga). Sin embargo, la calidad de las imágenes reproducidas en el modo LP no será tan buena como en el modo SP.
- Cuando reproduzca una cinta grabada en esta videocámara en el modo LP en una videocámara de 8 mm de otro tipo o una videograbadora, es posible que la calidad de reproducción no sea tan buena como la reproducida en esta videocámara.

To focus the viewfinder lens

If the viewfinder is not in focus at all or when you use the camcorder after someone else has used it, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

Para enfocar la lente del visor

Cuando el visor no esté enfocado en absoluto, o cuando vaya a utilizar la videocámara después de haberla empleado otra persona, enfoque la lente del visor. Gire el anillo de ajuste de la lente del visor de forma que los indicadores del visor queden nítidamente enfocados.



Recording with the START/STOP button depressed

You can also make recording while pressing down the START/STOP button. To make the START/STOP button work this way, slide START/STOP MODE to ⊥ . **[a]**

Shooting scenery in several short takes

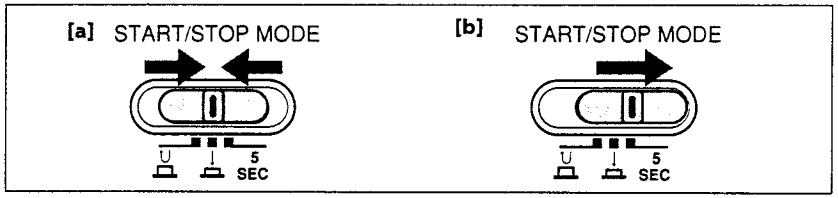
You can automatically make recording for about 5 seconds with the 5 SEC mode (p. 33). To make the START/STOP button work this way, slide START/STOP MODE to 5 SEC. **[b]**

Grabación con la tecla START/STOP presionada

Usted también podrá grabar presionando la tecla START/STOP. Para hacer funcionar la tecla START/STOP de esta manera, deslice START/STOP MODE hasta ⊥ . **[a]**

Videofilmación de escenas en varias tomas cortas

Utilizando 5 SEC modo (pág. 33), podrá videofilmar automáticamente durante unos 5 segundos. Para que la tecla START/STOP funcione de esta manera, deslice el selector START/STOP MODE hasta 5 SEC. **[b]**



Note on recording

When you record from the beginning of the tape, run the tape for about 15 seconds before actual recording. This prevents the camcorder from missing any start-up scenes when you play back the tape.

Nota sobre la grabación

Cuando grabe desde el comienzo de la cinta, haga que ésta avance unos 15 segundos antes de comenzar la videofilmación actual. Esto evitará que se pierdan las escenas iniciales cuando se reproduzca la cinta.

Notes on the tape counter

- The tape counter indicates the recording or playback time. Use it as a guide. There will be a time lag of several seconds from the actual time. To set the counter to zero, press COUNTER RESET.
- If the tape is recorded in SP and LP modes mixed, the tape counter shows incorrect recording time. When you intend to edit the tape using the tape counter, record in same (SP or LP) mode.

Note on beep sound

As indicated with ♪ in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder. Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, change the BEEP setting to OFF.

Note on the AUTO DATE feature

The clock is set at the factory to Tokyo time for the models sold in Japan, and to New York or Panama time for other models. You can reset the clock.

The AUTO DATE feature shows the date automatically once a day. However, the date may automatically appear more than once a day when:

- you reset the date and time.
- you eject and insert the tape again.
- you stop recording within 10 seconds.

When moving from indoors to outdoors (or vice versa)

Turn STANDBY up and point the camcorder at a white object for about 15 seconds so that the white balance is properly adjusted.

Notas sobre el contador de la cinta

- El contador de la cinta indicará el tiempo de grabación o de reproducción. Empléelo como una guía. Es posible que exista una diferencia de varios segundos del tiempo real. Para ajustar el contador a cero, presione COUNTER RESET.
- Si la cinta se ha grabado en los modos SP y LP mezclados, el contador de la cinta indicará un tiempo de videofilmación incorrecto. Cuando intente editar la cinta utilizando el contador de la cinta, grabe en el mismo modo (SP o LP).

Nota sobre el pitido

Como se indica con la marca ♪ en las ilustraciones, cuando conecte la alimentación o cuando comience la videofilmación, sonará un pitido, y cuando pare la videofilmación sonarán dos pitidos para confirmar la operación. También sonarán varios pitidos como advertencia de una condición anormal de la videocámara. Tenga en cuenta que los pitidos no se grabarán en la cinta. Si no desea oír los pitidos, cambie el ajuste de BEEP a OFF.

Nota sobre la función AUTO DATE

El reloj está ajustado en fábrica a la hora de Tokio en el modelo para Japón y a la de Nueva York o Panamá en otros modelos. El reloj puede reajustarse.

La función AUTO DATE se activará una vez al día. Sin embargo, la fecha aparecerá automáticamente más de una vez al día cuando:

- reajuste la fecha y la hora.
- extraiga y vuelva a insertar el videocassette.
- pare la grabación antes de 10 segundos.

Cuando se mueva del interior al exterior (o viceversa)

Gire STANDBY hacia arriba y apunte con la videocámara hacia un objeto blanco durante unos 15 segundos de forma que el equilibrio del blanco se ajuste apropiadamente.

Using the zoom feature

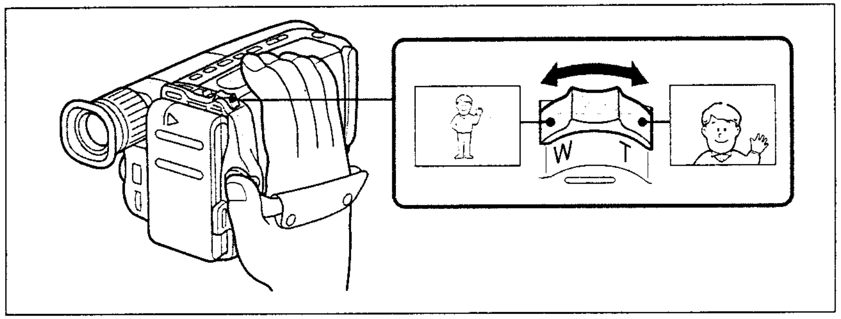
Zooming is a recording technique that lets you change the size of the subject in the scene. For more professional-looking recordings, use the zoom sparingly.

T side: for telephoto (subject appears closer)
W side: for wide-angle (subject appears farther away)

Utilización del zoom

El zoom es una técnica de videofilmación que le permite cambiar el tamaño del motivo en la escena. Para filmaciones de aspecto más profesional, utilice el zoom en forma limitada.

Lado T: para telefoto (el motivo se ve cercano)
Lado W: para gran angular (el motivo se ve lejano)



Zooming speed (Variable speed zooming)

Turn the power zoom lever fully for a high-speed zoom. Turn it lightly for a relatively slow zoom.

When you shoot a subject using a telephoto zoom

If you cannot get a sharp focus while in extreme telephoto zoom, move the power zoom lever to the "W" side until the focus is sharp.

You can shoot a subject that is at least 80 cm (about 2.6 feet) away from the lens surface in the telephoto position, or 1 cm (about 1/2 inches) in the wide-angle position.

Velocidad del zoom (zoom de velocidad variable)

Gire completamente la palanca del zoom motorizado para efectuar el zoom a gran velocidad. Gírela un poco para hacerlo a una velocidad relativamente lenta.

Cuando videofilme un motivo empleando el acercamiento con el zoom

Si no puede enfocar nítidamente cuando videofilme con el zoom en el extremo del telefoto, gire la palanca del zoom motorizado hacia el lado "W" hasta enfocar nítidamente.

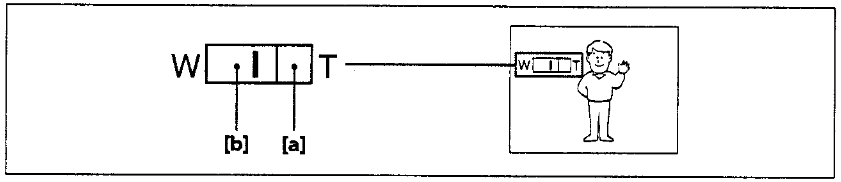
Usted podrá videofilmar un motivo que esté por lo menos a 80 cm de la superficie del objetivo en la posición de telefoto, y a 1 cm en la de gran angular.

Notes on digital zoom (CCD-TRV21 only)

- More than 12x zoom is performed digitally, and the picture quality deteriorates as you go toward the " T " side. If you do not want to use the digital zoom, set the D ZOOM function to OFF.
- The vertical bar in the power zoom indicator separates the digital zooming zone (right side of the bar **[a]**) and the optical zooming zone (left side of the bar **[b]**). If you set the D ZOOM function to OFF, the right side of the bar **[a]** disappears.

Notas sobre el zoom digital (CCD-TRV21 solamente)

- A más de 12 aumentos, el zoom se realizará digitalmente, y la calidad de la imagen se deteriorará a medida que vaya hacia el lado "T". Si no desea utilizar el zoom digital, ajuste la función D ZOOM a OFF.
- La barra vertical del indicador del zoom motorizado separa la zona del zoom digital (parte situada a la derecha de la barra **[a]**) y la zona del zoom óptico (parte situada a la izquierda de la barra **[b]**). Si ha ajustado la función D ZOOM a OFF, la parte situada a la derecha de la barra **[a]** desaparecerá.



Shooting with the LCD screen

You can also record the picture while looking at the LCD screen.
When using the LCD screen, the viewfinder turns off automatically. You cannot monitor the sound from the speaker during recording.

(1) While pressing PUSH OPEN, open the LCD panel.

(2) Adjust the angle of the LCD panel.
The LCD panel moves about 90 degrees to this side and about 210 degrees to the other side.
To adjust the brightness of the LCD screen, turn the BRIGHT dial.

The battery life is longer when the LCD panel is closed. Use the viewfinder instead of the LCD screen to save the battery power.

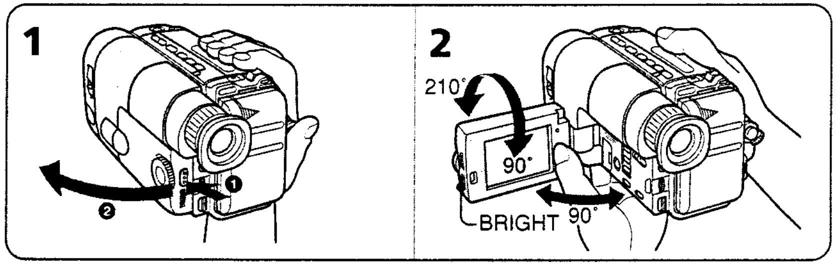
Videofilmación con la pantalla de cristal líquido

Usted también podrá grabar imágenes observando la pantalla de cristal líquido.
Cuando utilice la pantalla de cristal líquido, el visor se desactivará automáticamente. Usted no podrá escuchar el sonido a través del altavoz durante la videofilmación.

(1) Manteniendo pulsada PUSH OPEN, abra la pantalla de cristal líquido.

(2) Ajuste el ángulo de la pantalla de cristal líquido.
La pantalla de cristal líquido podrá moverse unos 90 grados hacia este lado y aproximadamente 210 grados hacia el otro.
Para ajustar el brillo de la pantalla de cristal líquido, gire el mando BRIGHT.

La duración de la batería será mayor cuando la pantalla de cristal líquido esté cerrada. Para ahorrar energía de la batería, utilice el visor en vez de la pantalla de cristal líquido.

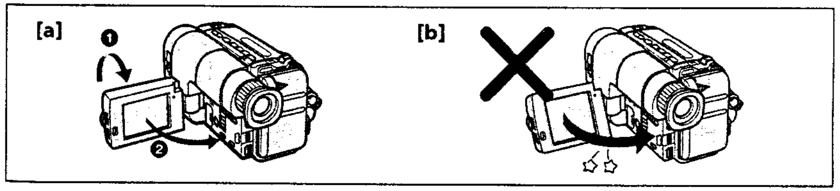


Notes on the LCD panel

- When closing the LCD panel, turn it vertically until it clicks **[a]**.
- When turning the LCD panel, turn it always vertically; otherwise, the camcorder body may be damaged or the LCD panel may not close properly **[b]**.
- Close the LCD panel completely when not in use.

Notas sobre al pantalla de cristal líquido

- Para cerrar la pantalla de cristal líquido, gírela verticalmente hasta que chasquee **[a]**.
- Cuando gire la pantalla de cristal líquido, hágalo siempre verticalmente, ya que de lo contrario podría dañar el cuerpo de la videocámara o la pantalla no se cerraría adecuadamente **[b]**.
- Cuando no vaya a utilizar la pantalla de cristal líquido, ciérrela completamente.

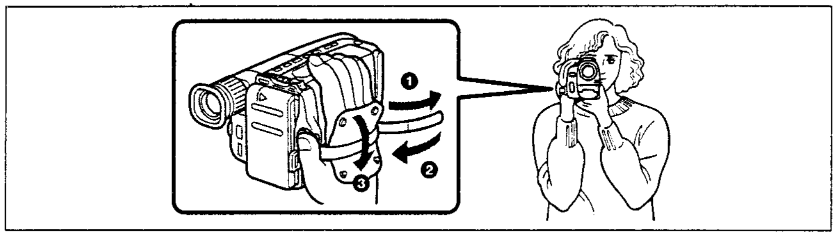


Hints for better shooting

Consejos para videofilmar mejor

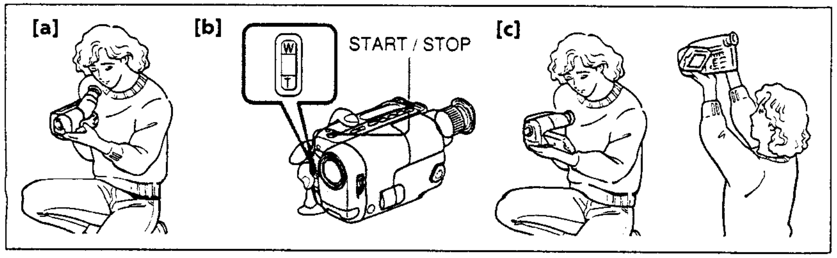
For hand-held shots, you'll get better results by holding the camcorder according to the following suggestions:
- Hold the camcorder firmly and secure it with the grip strap so that you can easily manipulate the controls with your thumb.

Para videofilmar con la videocámara en las manos, podrá obtener mejores imágenes sujetándola como se indica a continuación:
- Sujete la videocámara firmemente y asegúrela con la correa de la empuñadura de modo que pueda manipular fácilmente los controles con el pulgar.



- Place your right elbow against your side.
- Place your left hand under the camcorder to support it.
- Place your eye firmly against the viewfinder eyecup.
- Use the viewfinder frame as a guide to determine the horizontal plane.
- You can record in a low position to get an interesting recording angle. Lift the viewfinder up for recording from a low position **[a]**.
- While recording in a low position, you can use the START/STOP button on the top of the camcorder or the power zoom button located on the front **[b]**. Note that you cannot change zooming speed using the front power zoom button.
- You can also record in a low position or even in a high position using the LCD panel **[c]**.

- Coloque su codo derecho firmemente contra su costado.
- Coloque su mano izquierda debajo de la videocámara para sostenerla.
- Apoye el ocular del visor de la videocámara firmemente contra su ojo.
- Para determinar el plano horizontal, utilice el cuadro del visor como referencia.
- Para obtener un ángulo de videofilmación interesante, usted también podrá grabar desde una posición baja. Para grabar desde una posición baja, gire el visor hacia arriba **[a]**.
- Cuando videofilme en posición baja, podrá utilizar la tecla START/STOP de la parte superior de la videocámara o la tecla del zoom motorizado situada en la parte frontal **[b]**. Tenga en cuenta que usted no podrá cambiar la velocidad del zoom utilizando la tecla del zoom motorizado.
- Usted también podrá videofilmar en posición baja, incluso en posición alta, utilizando la pantalla de cristal líquido **[c]**.



Place the camcorder on a flat surface or use a tripod

Try placing the camcorder on a table top or any other flat surface of suitable height. If you have a tripod for a still camera, you can also use it with the camcorder. When attaching a non-Sony tripod, make sure that the length of the tripod screw is less than 6.5 mm (9/32 in). Otherwise, the screw may damage the inner parts of the camcorder.

Cautions on the viewfinder and the LCD

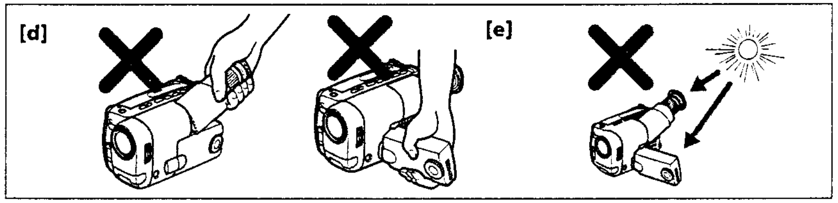
- Do not pick up the camcorder by the viewfinder or by the LCD panel **[d]**.
- Do not place the camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or the LCD panel may be damaged. Be careful when placing the camcorder under sunlight or by a window **[e]**.

Coloque la videocámara en una superficie plana o utilice un trípode

Pruebe colocando la videocámara sobre una mesa u otra superficie plana de altura adecuada. Si posee un trípode para cámara fotográfica, podrá emplearlo también con esta videocámara. Cuando utilice un trípode que no sea Sony, asegúrese de que la longitud del tornillo del trípode sea inferior a 6,5 mm. De lo contrario, es posible que el tornillo dañe las partes internas de la videocámara.

Precauciones sobre el visor y la pantalla de cristal líquido

- No sujete la videocámara por el visor ni por la pantalla de cristal líquido **[d]**.
- No deje la videocámara con el visor ni con la pantalla de cristal líquido apuntando hacia el sol. El interior del visor o de la pantalla de cristal líquido podría dañarse. Tenga cuidado cuando deje la videocámara bajo la luz solar directa o cerca de una ventana **[e]**.



Notes on the LCD screen

- The LCD screen is made with high-precision technology. However, black points or bright points of light (red, blue or green) may appear constantly on the LCD screen. These points are not recorded on the tape. This is not a malfunction.
  (Effective dots: more than 99.99%)
- When you use the LCD screen outdoors in direct sunlight, the LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

Notas sobre la pantalla de cristal líquido

- La pantalla de cristal líquido ha sido fabricada con tecnología de gran precisión. Sin embargo, es posible que en la misma aparezcan puntos negros o brillantes de luz (rojos, azules, o verdes). Estos puntos no se grabarán en la cinta. Esto no significa mal funcionamiento.
  (Puntos efectivos: más del 99,99%)
- Si utiliza la pantalla de cristal líquido en exteriores bajo la luz solar directa, es posible que resulte difícil de ver. Cuando suceda esto, recomendamos utilizar el visor.

Checking the recorded picture

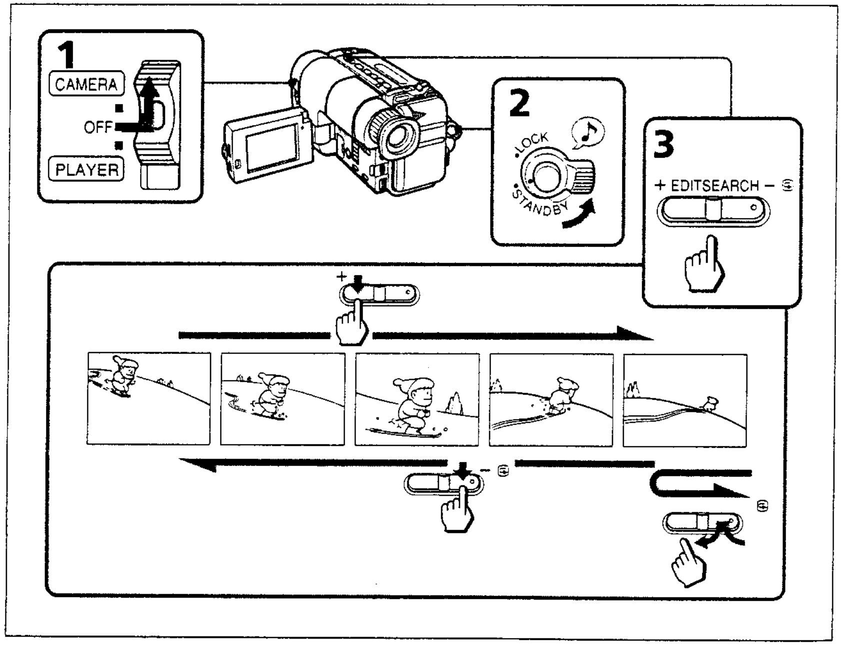
Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder. You can also review the picture on the LCD screen.

(1) While pressing the small green button on the POWER switch, set it to CAMERA.
(2) Turn STANDBY up.
(3) Press the - (⊜) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back **(Rec Review)**.
You can also monitor the sound from the speaker or by using an earphone (not supplied).
Hold down the - side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side **(Edit Search)**.

Verificación de las imágenes grabadas

Utilizando EDITSEARCH, usted podrá revisar la última escena grabada o comprobar la imagen grabada en el visor.

(1) Manteniendo presionado el pequeño botón verde del selector POWER, ponga hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Presione EDITSEARCH. Presione momentáneamente el lado – (⊜). Se reproducirán los últimos segundos de la parte filmada **(Revisión de la grabación)**.
Mantenga presionado el lado - de EDITSEARCH hasta que la cinta retroceda hasta la escena deseada. La última parte filmada se reproducirá. Para avanzar la cinta, mantenga presionado el lado + **(Búsqueda para la edición)**.



To stop playback

Release EDITSEARCH.

To go back to the last recorded point after edit search

Press END SEARCH. The last recorded point is played back for about 5 seconds if the tape was recorded in SP mode, or 10 seconds if the tape was recorded in LP mode, and stops.
Note that this function does not work once you eject the cassette after you recorded in the tape.

To begin re-recording

Press START/STOP. Re-recording begins from the last recorded point or the point you released EDITSEARCH. Provided you do not eject the tape, the transition between the last scene you recorded and the next scene you record will be smooth.

Para parar la reproducción

Suelte EDITSEARCH.

Para volver al último punto grabado después de la búsqueda para edición

Presione END SEARCH. El último punto grabado se reproducirá durante unos 5 segundos si la cinta fue grabada en el modo SP, o 10 segundos si fue grabada en el modo LP, y después se parará.
Tenga en cuenta que esta función no trabajará cuando haya extraído el videocassette después de haber grabado la cinta.

Para reanudar la grabación

Presione START/STOP. La grabación se iniciará desde el punto en el que soltó EDITSEARCH. Mientras no extraiga el videocassette, la transición entre la última escena grabada y la siguiente será uniforme.

Playing back a tape

You can monitor the playback picture on the LCD screen.

(1) While pressing the small green button on the POWER switch, set it to PLAYER.
(2) Insert the recorded tape with the window facing out.
(3) While pressing PUSH OPEN, open the LCD panel. Adjust the angle of the LCD panel or the brightness of the LCD screen if necessary.
(4) Press ▶ to start playback.
(5) Adjust the volume using VOL.

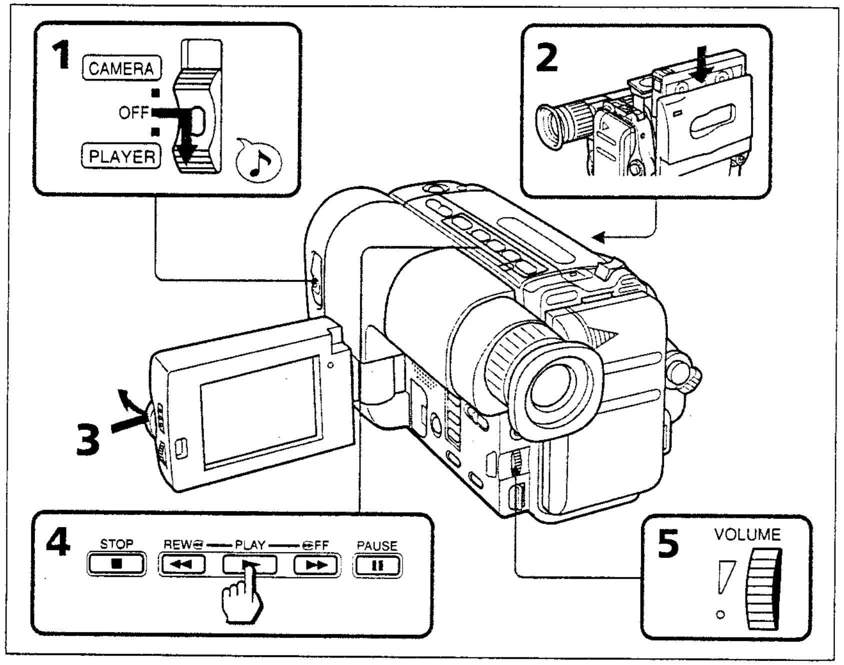
You can also monitor on the TV screen after connecting the camcorder to the VCR/TV.

Reproducción de cintas

Usted podrá contemplar las imágenes de reproducción en la pantalla de cristal líquido.

(1) Manteniendo presionado el pequeño botón verde del selector POWER, deslice éste hasta PLAYER.
(2) Inserte el videocassette grabado con la ventanilla hacia afuera.
(3) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido. Si es necesario, ajuste el ángulo o el brillo de la pantalla de cristal líquido.
(4) Para iniciar la reproducción, presione ▶.
(5) Ajuste el volumen utilizando VOL.

Usted también podrá contemplar las imágenes en la pantallas de un televisor después de haber conectado la videocámara a una videograbadora/televisor.



To stop playback, press ■.
To rewind the tape, press ◀◀.
To fast-forward the tape, press ▶▶.

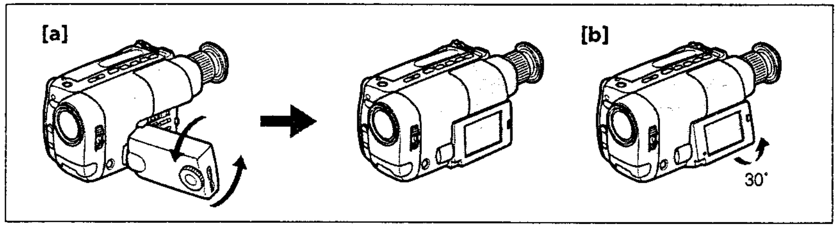
Para parar la reproducción, presione ■.
Para rebobinar la cinta, presione ◀◀.
Para hacer que la cinta avance rápidamente, presione ▶▶.

When watching on the LCD screen

You can turn the LCD panel over and move back to the camcorder with the LCD screen facing out. **[a]**
You can change the angle of the LCD panel. **[b]**

Cuando contemple imágenes en la pantalla de cristal líquido

Usted podrá dar la vuelta a la pantalla de cristal líquido y replegarla en la videocámara encarada hacia afuera. **[a]**
Usted podrá cambiar el ángulo de la pantalla de cristal líquido. **[b]**



Using the Remote Commander

You can control playback using the supplied Remote Commander.
Before using the Remote Commander, insert the R6 (size AA) batteries.

Note on DISPLAY button

Press DISPLAY to erase the screen indicators on the LCD screen. To display the indicators, press again.
The indicators don't appear on the TV.

Using an earphone

Connect an earphone (not supplied) to the ⓒ jack. You can adjust the volume of the earphone using VOL.

To view the playback picture in the viewfinder

Close the LCD panel. The viewfinder turns on automatically. When using the viewfinder, you can monitor the sound only by using an earphone.
To view on the LCD screen again, open the LCD panel. The viewfinder turns off automatically.

Various playback modes

To view a still picture (playback pause)

Press ❚❚ during playback. To resume playback, press ❚❚ or ▶.

To locate a scene (Picture Search)

Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

Utilización del telemando

Usted podrá controlar la reproducción utilizando el telemando suministrado.
Antes de utilizar el telemando, insértele pilas R6 (tamaño AA).

Nota sobre la tecla DISPLAY

Presione DISPLAY para borrar los indicadores de la pantalla de cristal líquido. Para hacer que se visualicen los indicadores, vuelva a presionarla. Los indicadores no aparecerán en la pantalla del televisor.

Utilización de un auricular

Conecte un auricular (no suministrado) a la toma ⓒ. Usted podrá ajustar el volumen del auricular utilizando VOL.

Para contemplar las imágenes de reproducción en el visor

Cierre la pantalla de cristal líquido. El visor se activará automáticamente. Cuando utilice el visor, solamente podrá escuchar el sonido utilizando un auricular.
Para volver a contemplar las imágenes en la pantalla de cristal líquido, abra ésta. El visor se desactivará automáticamente.

Diversos modos de reproducción

Para ver una imagen fija (reproducción en pausa)

Presione ❚❚ durante la reproducción. Para reanudar la reproducción, presione ❚❚ o ▶.

Para localizar una escena (Búsqueda de imágenes)

Mantenga presionada ◀◀ o ▶▶ durante la reproducción. Para reanudar la reproducción normal, suelte la tecla.

Playing back a tape

To monitor the high-speed picture while advancing the tape or rewind (Skip Scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape.
To resume normal playback, press ▶.

Notes on playback
- Streaks appear and the sound is muted in the various playback modes.
- When playback pause mode lasts for 5 minutes more, the camcorder automatically enters stop mode.

Reproducción de cintas

Para ver las imágenes a gran velocidad durante el avance rápido o el rebobinado (Exploración con salto)
Mantenga presionada ◀◀ durante el rebobinado o ▶▶ durante el avance de la cinta. Para reanudar la reproducción normal, presione ▶.

Notas sobre la reproducción
- En los diversos modos de reproducción aparecerán franjas y el sonido se silenciará.
- Cuando el modo de imagen fija dure 5 minutos o más, la videocámara pasará automáticamente al modo de parada.

Searching for the end of the picture

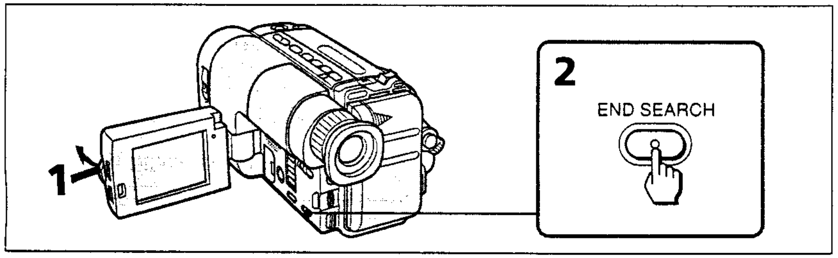
You can go to the end of the recorded portion after you record and play back the tape to make the transition between the last scene you recorded and the next scene smooth. The tape starts rewinding or fast-forwarding and the last 5 seconds play back if the tape was recorded in SP mode, or the last 10 seconds play back if the tape was recorded in LP mode. Then the tape stops at the end of the recorded picture **(End Search)**.
Note that End Search function does not work once you eject the cassette after you recorded in the tape.

(1) While pressing PUSH OPEN, open the LCD panel.
(2) Press END SEARCH.
This function works when the POWER switch is set to either CAMERA or PLAYER.

Búsqueda del final de una parte grabada

Usted podrá ir al final de una parte grabada después de haber grabado y reproducido una cinta para hacer que la transición entre la última escena grabada y la siguiente no resulte brusca. La cinta iniciará el rebobinado o el avance rápido, y se reproducirán los últimos 5 segundos, si la cinta fue grabada en el modo SP, o los últimos 10 segundos, si fue grabada en el modo LP. Después la cinta se parará al final de la parte grabada **(Búsqueda de fin)**.
Tenga en cuenta que la función de búsqueda de fin no trabajará después de haber extraído el videocassette grabado.

(1) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido.
(2) Presione END SEARCH.
Esta función trabajará cuando el selector POWER esté en CAMERA o en PLAYER.



Using alternative power sources

You can choose any of the following power sources for your camcorder: battery pack, the house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	Supplied AC power adaptor
Outdoor	Battery pack	Battery pack (Ni-Cd type)
In the car	12 V or 24 V car battery	DC pack DCP-77

Note on power sources
Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

This mark indicates that this product is a genuine accessory for Sony video product. When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.

Utilización de fuentes de alimentación alternativas

Con esta videocámara podrá elegir cualquiera de las siguientes fuentes de alimentación: batería, corriente de la red, y batería de un automóvil de 12/24 V. Elija la fuente de alimentación apropiada de acuerdo con el lugar donde desee utilizar la videocámara.

Lugar	Fuente de alimentación	Accesorio necesario
Interiores	Corriente de la red	Adaptador de alimentación de CA suministrado
Exteriores	Batería	Batería (de tipo níquel cadmio)
En un automóvil	Batería de automóvil de 12 V o 24 V	Paquete de CC DCP-77

Nota sobre las fuentes de alimentación
La desconexión de la fuente de alimentación o la extracción de la batería durante la grabación o la reproducción puede dañar la cinta insertada. Cuando suceda esto, vuelva a conectar inmediatamente la fuente de alimentación.

Esta marca indica que este producto es un accesorio genuino para los productos de vídeo Sony.
A la hora de adquirir los productos de vídeo Sony, recomendamos adquirir los accesorios con esta marca "GENUINE VIDEO ACCESSORIES".

Using alternative power sources

Using the house current

To use the supplied AC power adaptor:

(1) Connect the power cord to a wall outlet. Insert the top of the connecting plate of the AC power adaptor into the top of the battery mounting surface. Push the connecting plate so that it attaches firmly.

(2) Set the selector to VTR (DC OUT).

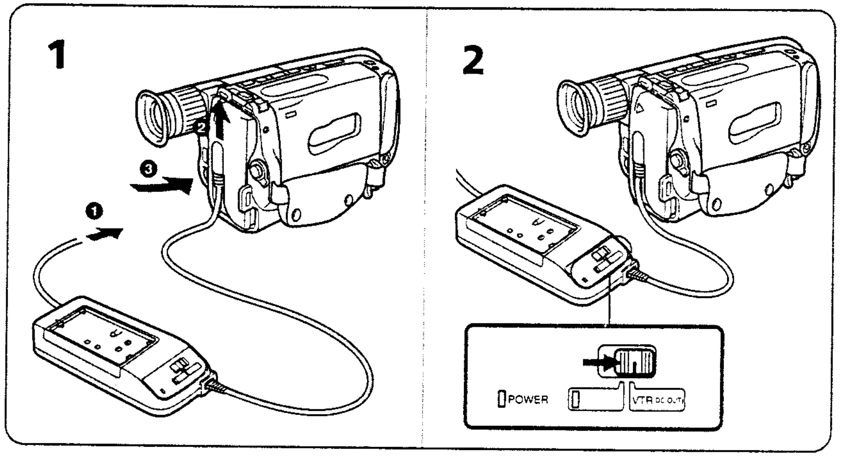
Utilización de fuentes de alimentación alternativas

Utilización con la corriente de la red

Para utilizar el adaptador de alimentación de CA suministrado:

(1) Conecte el cable de alimentación de CA a una toma de la red. Inserte la parte superior de la placa conectora del adaptador de alimentación de CA en la parte superior de la superficie de montaje de la batería de la videocámara. Empuje la placa de forma que quede firmemente fijada.

(2) Ponga el selector en VTR (DC OUT).



WARNING

Power cord must only be changed at qualified service shop.

PRECAUTIONS

The set is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the set itself has been turned off.

Notes on the POWER lamp

- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, set the selector to VTR (DC OUT) and disconnect the power cord. After about one minute, reconnect the power cord.

ADVERTENCIA

El cable de alimentación de CA deberá cambiarse solamente en una estación de servicio cualificada.

PRECAUCIÓN

Este aparato no se desconectará de la fuente de alimentación de CA (red) mientras esté enchufado en una toma de la misma, incluso aunque haya desconectado su alimentación de CA

Notas sobre la lámpara POWER

- Es normal que esta lámpara permanezca encendida durante un momento aunque desenchufe la unidad después de utilizarla.
- Cuando la lámpara POWER no se encienda, desconecte el cable de alimentación. Aproximadamente un minuto después, vuelva a conectar el cable de alimentación.

To remove the adaptor

The adaptor is removed in the same way as the battery pack.

Using a car battery

Use the DCP-77 DC pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of the car (12 V or 24 V). Connect the DC pack to the battery mounting surface of the camcorder.

To remove the DC pack

The DC pack is removed in the same way as the battery pack.

Para quitar el adaptador

Quítelo igual que la batería.

Utilización con la batería de un automóvil

Utilice un paquete de CC DCP-77 (no suministrado). Conecte el cable del paquete de CC a la toma del encendedor de cigarrillos de un automóvil (12 o 24 V). Conecte el paquete de CC a la superficie de montaje de la batería de la videocámara.

Para quitar el paquete de CC

Quítelo igual que la batería.

Letting the subject monitor the shot

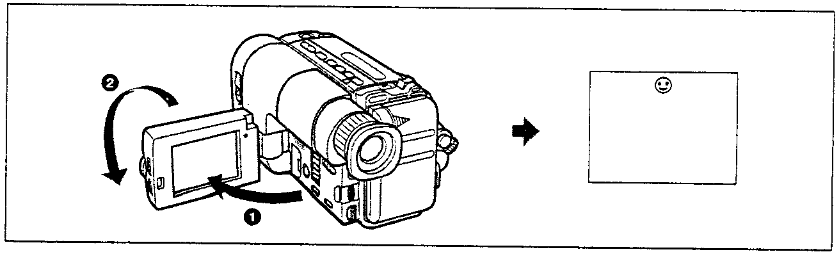
You can turn the LCD panel over so that it faces the other way and you can let the subject monitor the shot while shooting with the viewfinder.

Turn the LCD panel vertically first until it clicks, then turn it over. The ☺ indicator appears on the LCD screen **(Mirror mode)** and the date and remaining battery indicators disappear.

Para hacer que el sujeto observe la videofilmación

Usted podrá girar la pantalla de cristal líquido para que quede encarada de forma que el sujeto pueda ver las imágenes mientras usted videofilme a través del visor.

Gire en primer lugar verticalmente la pantalla de cristal líquido hasta que chasquee, y después dele la vuelta. En la pantalla de cristal líquido aparecerá el indicador ☺ **(Modo de espejo)** y los indicadores de fecha y de batería restante desaparecerán.



Letting the subject monitor the shot

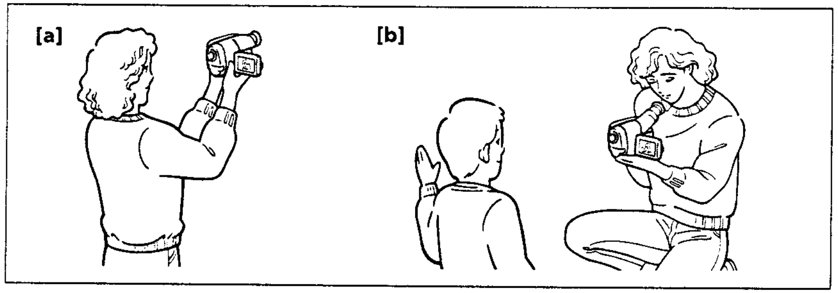
To cancel mirror mode
Turn the LCD panel back toward the viewfinder.

Notes on mirror mode
- When you turn the LCD panel about 135 degrees to 210 degrees, the camcorder enters mirror mode.
- Using the mirror mode, you can record yourself while watching yourself on the LCD **[a]**.
- The picture on the LCD looks as a mirror-image while recording in mirror mode **[b]**. The STBY indicator appears as ●ll and REC as ●.
- The date appears in reverse when the AUTO DATE feature is turned on. When recorded it will be normal.
- While recording in mirror mode, you cannot operate the following buttons: COUNTER RESET, TITLE, DATE(+) and TIME(NEXT).

Para hacer que el sujeto observe la videofilmación

Para cancelar el modo de espejo
Gire la pantalla de cristal líquido hacia el visor.

Notas sobre el modo de espejo
- Cuando gire la pantalla de cristal líquido de unos 135 a 210 grados, la videocámara entrará en el modo de espejo.
- Utilizando el modo de espejo, podrá videofilmarse usted mismo observándose en la pantalla. **[a]**
- Cuando videofilme en el modo de espejo, las imágenes aparecerán en la pantalla al igual que en un espejo **[b]**. El indicador STBY aparecerá como ●ll, y REC como ●.
- Cuando haya activado la función AUTO DATE, la fecha aparecerá invertida. Cuando la grabe, aparecerá normal.
- Cuando videofilme en el modo de espejo, no podrá utilizar las teclas siguientes: COUNTER RESET, TITLE, DATE (+), ni TIME (NEXT).

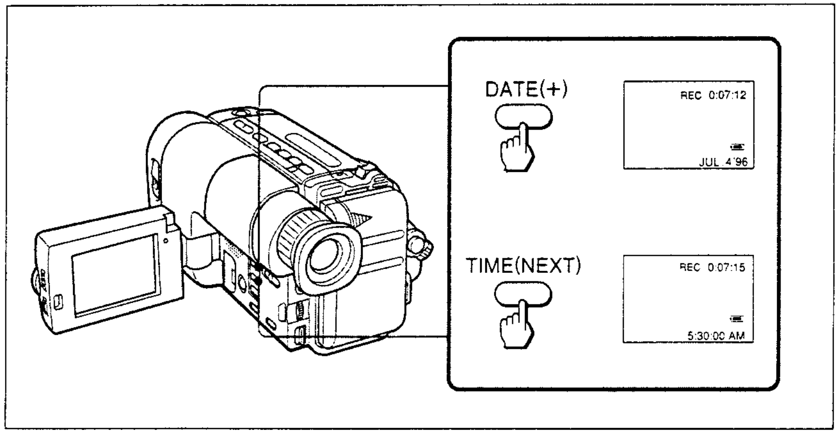


Recording with the date or time

Before you start recording or during recording, press DATE(+) or TIME(NEXT). You can record the date or time displayed on the LCD screen or in the viewfinder with the picture. You cannot record the date and time at the same time. Except for the date or time indicator, no indicator on the LCD screen or in the viewfinder is recorded.
The clock is set at the factory to Tokyo time for the models sold in Japan, and to New York or Panama time for other models.

Grabación de la fecha o la hora

Antes de comenzar la videofilmación, presione DATE (+) o TIME (NEXT). Usted podrá grabar con las imágenes la fecha o la hora visualizada en la pantalla de cristal líquido o en el visor. La fecha y la hora no podrán grabarse al mismo tiempo.
Excepto el indicador de la fecha o la hora, no se grabará ningún indicador de la pantalla de cristal líquido ni del visor.
El reloj ha sido ajustado en fábrica a la hora de Tokio para los modelos vendidos en Japón, y a la de Nueva York o Panamá para los demás modelos.



To stop recording with the date or time
Press DATE(+) or TIME(NEXT) again. The date or time indicator disappears. The recording continues.

Note
You cannot superimpose a title during recording the date or time.

Para parar la grabación de la fecha o la hora
Vuelva a presionar DATE (+) o TIME (NEXT). La grabación de las imágenes continuará.

Nota
Durante la grabación de la fecha o la hora no podrá superponer un título.

Shooting with backlighting

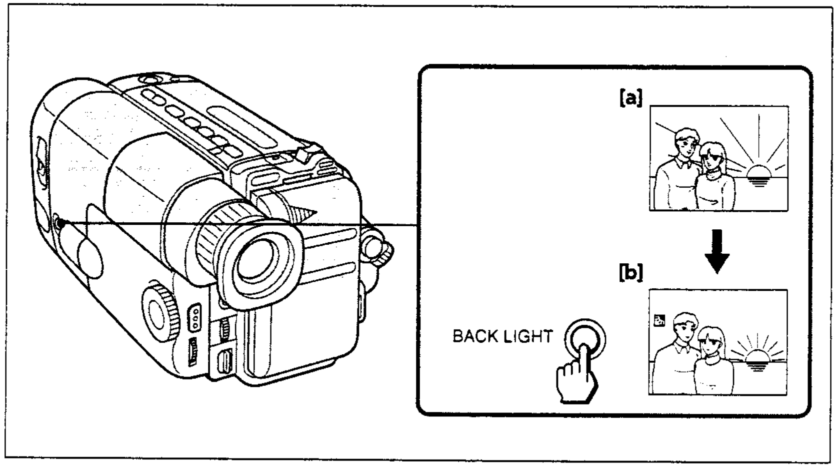
When you shoot a subject with the light source behind the subject or a subject with a light background, use the BACK LIGHT function.

Press BACK LIGHT. The ▣ indicator appears in the viewfinder or on the LCD screen.

Videofilmación a contraluz

Cuando videofilme un motivo con la fuente de iluminación detrás de él o a contraluz, utilice la función BACK LIGHT.

Presione BACK LIGHT. En el visor o en la pantalla de cristal líquido aparecerá el indicador ▣.



[a] Subject is too dark because of backlight.
[b] Subject becomes bright with backlight compensation.

After shooting

Be sure to release this adjustment condition by pressing BACK LIGHT again. The ▣ indicator disappears. Otherwise, the picture will be too bright under normal lighting condition.

This function is also effective under following conditions:

- On snow e.g. at the ski resort
- At the beach under strong sunshine
- A subject with a light source nearby or a mirror reflecting light
- A white subject against a white background. Especially when you shoot a person wearing shiny clothes made of silk or synthetic fiber, his or her face tends to become dark if you do not use this function.

[a] El motivo está demasiado oscuro debido a la contraluz.
[b] El motivo se ve claro con la compensación de la contraluz.

Después de la videofilmación

Cerciórese de anular este ajuste volviendo a presionar BACK LIGHT. El indicador ▣ desaparecerá. De lo contrario, en condiciones normales de iluminación, las imágenes resultarían demasiado brillantes.

Esta función también será efectiva en las siguientes condiciones:

- Paisaje de nieve, p. ej. en una pista de esquí.
- En una playa con luz solar fuerte.
- Un motivo con una fuente de iluminación cercana o un espejo que refleje luz.
- Un motivo blanco contra un fondo blanco. Especialmente cuando videofilme una persona vestida con ropa brillante como de seda o fibra sintética sin utilizar esta función, el rostro tenderá a grabarse oscuro.

Using the PROGRAM AE function

You can select from three PROGRAM AE (Auto Exposure) modes to suit your shooting situation. When you use PROGRAM AE, you can capture high-speed action or night views.

Selecting the best mode

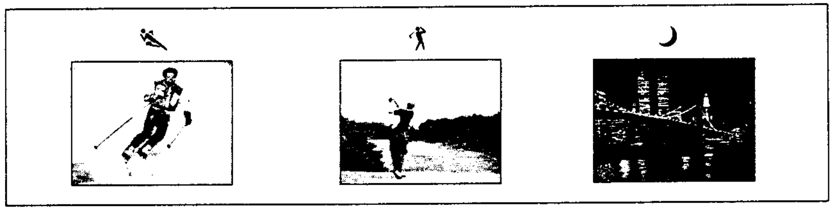
Select the best mode by using the following examples.

Utilización de la función PROGRAM AE

Usted podrá seleccionar entre tres modos de PROGRAM AE (exposición automática programada), de acuerdo con la condición de videofilmación. Con la función de PROGRAM AE, podrá captar una acción a gran velocidad o grabar vistas nocturnas.

Selección del mejor modo

Seleccione el modo apropiado consultando los siguientes ejemplos.



Sports mode

- Outdoor sports scenes such as football, tennis, golf or skiing
- A landscape in a moving car

High-speed shutter mode

- A golf swing or a tennis match in fine weather with the ball captured clearly
- Playing back certain scenes with high-speed movements in clear, sharp picture

Twilight mode

- Recording night views, neon signs or fireworks

Modo de deportes

- Videofilmación de escenas de deportes de exteriores como fútbol, tenis, golf o esquí
- Videofilmación de paisajes desde un automóvil en marcha

Modo de obturación a alta velocidad

- Un swing de golf o un partido de tenis en un día claro con la pelota visualizada claramente
- Reproducir ciertas escenas con movimientos a gran velocidad en una imagen clara y nítida

Modo de crepúsculo

- Videofilmación de vistas nocturnas, letreros de neón o fuegos artificiales.

Using the PROGRAM AE function

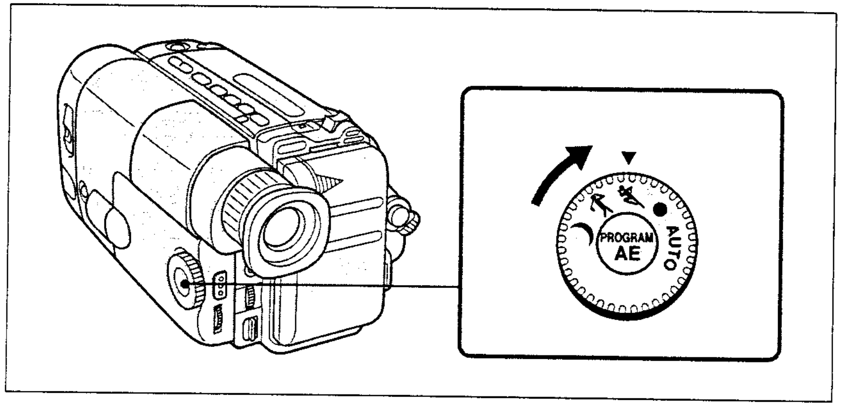
Empleo de la función PROGRAM AE

Using the PROGRAM AE function

Set the mark of the desired mode to the ▼ mark above the PROGRAM AE dial.

Utilización de la función PROGRAM AE

Ajuste la marca del modo deseado a la marca ▼ situada sobre el dial PROGRAM AE.



To return to automatic mode

Turn the PROGRAM AE dial so that the ▼ mark points to AUTO.

Note on shutter speed

The shutter speed in each PROGRAM AE mode is as follows:
Sports mode – between 1/60 to 1/500
High-speed shutter mode – 1/4000
Twilight mode – 1/60
AUTO mode – 1/60 (or 1/100 when the Steady Shot is on – CCD-TRV21 only)

Para volver al modo automático

Gire el mando PROGRAM AE hasta que la marca ▼ quede apuntando hacia AUTO.

Nota sobre la velocidad de obturación

La velocidad de obturación en cada modo PROGRAME AE es el siguiente:
Modo de deportes – entre 1/60 y 1/500
Modo de obturación a alta velocidad – 1/4000
Modo de crepúsculo – 1/60
Modo AUTO – 1/60 (o 1/100 cuando haya activado la función de videofilmación estable – CCD-TRV21 solamente)

Selecting the START/STOP mode

Selección del modo de inicio/parada

Your camcorder has two modes besides normal start/stop mode. These modes enable you to take a series of quick shots resulting in a lively video.

(1) While pressing PUSH OPEN, open the LCD panel.

(2) Set START/STOP MODE to the desired mode.

⊔ : Recording starts when you press START/STOP, and stops when you press it again (normal mode).

⊥ : The camcorder records only while you press down START/STOP.

5 SEC : When you press START/STOP, the camcorder records for 5 seconds and then stops automatically.

(3) Turn STANDBY up and press START/STOP. Recording starts.

If you selected 5 SEC, five dots appear in the viewfinder. The dots disappear at a rate of one per second. When five seconds elapse and all the dots disappear, the camcorder switches to Standby mode automatically.

If you selected ⊥ , the camcorder records as long as you hold down START/STOP.

Su videograbadora posee dos modos además del normal de inicio/parada. Estos modos le permitirán videofilmar una serie de tomas rápidas, lo que resultará en un vídeo alegre.

(1) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido.

(2) Ponga START/STOP MODE en el modo deseado.

⊔ : La grabación se iniciará cuando presione START/STOP, y se parará cuando vuelva a presionarla (modo normal).

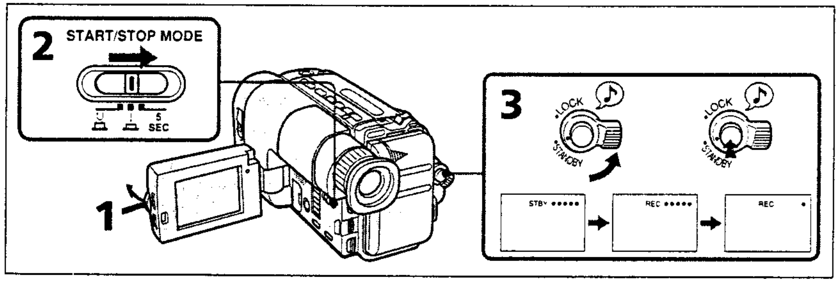
⊥ : La videocámara solamente videofilmará mientras mantenga presionada START/STOP.

5 SEC: Cuando presione START/STOP, la videocámara grabará durante 5 segundos y después se parará automáticamente.

(3) Gire STANDBY hacia arriba y presione START/STOP. Se iniciará la grabación.

Si ha seleccionado 5 SEC, en el visor aparecerán cinco puntos. Los puntos desaparecerán a un ritmo de uno por segundo. Después de haber transcurrido unos cinco segundos y de haber desaparecido todos los puntos, la videocámara cambiará automáticamente al modo de espera.

Si ha seleccionado ⊥ , la videocámara grabará mientras mantenga presionada START/STOP.



To extend the recording time in 5 SEC mode

Press START/STOP again before all the dots disappear. Recording continues for about 5 seconds from the moment you press START/STOP.

Note on 5 SEC recording

If you have turned off the indicators on the LCD screen, the dots do not appear.

Para prolongar el tiempo de videofilmación en el modo 5 SEC

Vuelva a presionar START/STOP antes de que hayan desaparecido todos los puntos. La grabación continuará durante unos 5 segundos desde el momento en el que presionó START/STOP.

Nota sobre la grabación en el modo 5 SEC

Si ha desactivado los indicadores de la pantalla de cristal líquido, los puntos no aparecerán.

Superimposing a title

You can select from nine preset titles to superimpose it on the picture during recording. Each time you press TITLE, the preset titles appear one by one.

To superimpose from the beginning

(1) Set the POWER switch to CAMERA.
(2) Turn STANDBY up.
(3) While pressing PUSH OPEN, open the LCD panel.
(4) Press TITLE repeatedly until the desired title appears. The title flashes.
(5) Press START/STOP to start recording.
(6) Press TITLE when you want to turn off the title.

To superimpose on the way of recording

(1) Press TITLE repeatedly until the desired title appears. The title flashes.
(2) When the title stops flashing, press TITLE. The title disappears.
(3) Press START/STOP to start recording.
(4) Press TITLE when you want superimpose the title.
(5) Press TITLE when you want to turn off the title.

Superposición de un título

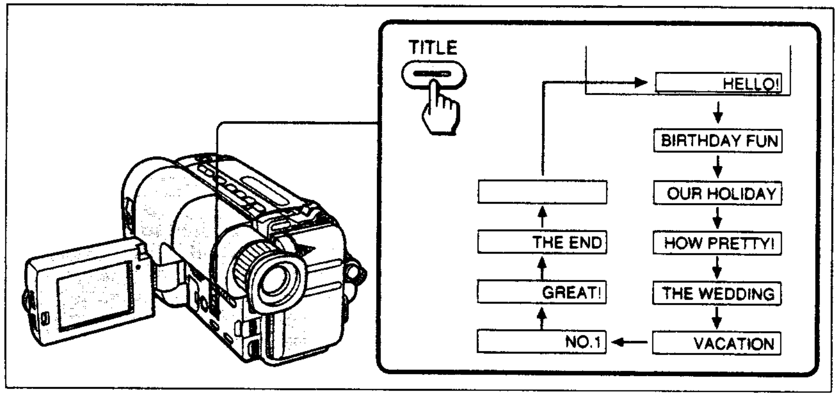
Usted podrá seleccionar un título entre nueve títulos memorizados y superponerlo sobre las imágenes durante la grabación. Cada vez que presione TITLE, los títulos memorizados aparecerán uno por uno.

Para superponer desde el comienzo

(1) Deslice el selector POWER hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido.
(4) Presione repetidamente TITLE hasta que aparezca el título deseado. El título parpadeará.
(5) Presione START/STOP para iniciar la videofilmación.
(6) Presione TITLE cuando desee que el título desaparezca.

Para superponer en medio de la videofilmación

(1) Presione repetidamente TITLE hasta que aparezca el título deseado. El título parpadeará.
(2) Cuando el título deje de parpadear, presione TITLE. El título desaparecerá.
(3) Presione START/STOP para iniciar la videofilmación.
(4) Presione TITLE cuando desee superponer el título.
(5) Vuelva a presionar TITLE cuando desee que el título desaparezca.



Note on selecting a title
You cannot select a title during recording.

Nota sobre la selección del título
El título no podrá seleccionarse durante la grabación.

Using the wide mode function

- CCD-TRV21 only

You can record a 16:9 wide picture to watch on the 16:9 wide-screen TV.

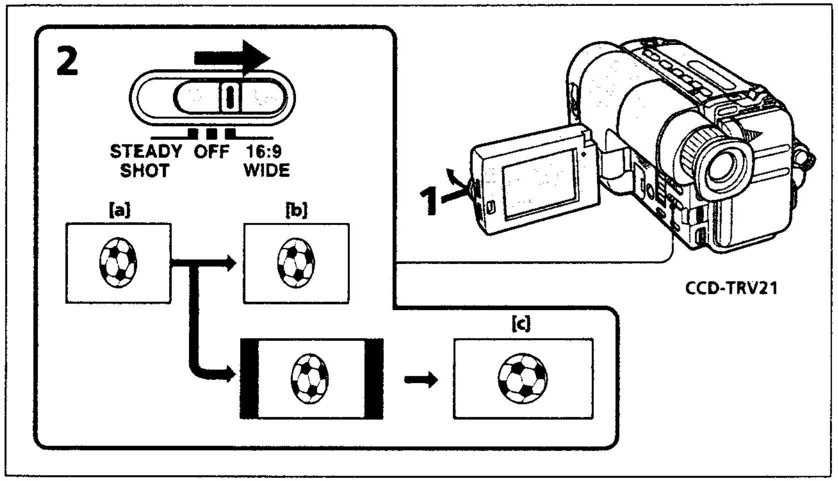
(1) While pressing PUSH OPEN, open the LCD panel.
(2) Set STEADY SHOT/16:9 WIDE to 16:9 WIDE. The picture in the viewfinder **[a]** or on a normal TV **[b]** is horizontally compressed. You can watch the picture of normal images on a wide-screen TV **[c]**.

Utilización del modo de pantalla amplia

- CCD-TRV21 solamente

Usted podrá videofilmar imágenes con 16:9 WIDE para contemplarlas en un televisor de pantalla amplia de 16:9.

(1) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido.
(2) Ponga STEADY SHOT/16:9 WIDE en 16:9 WIDE. La imagen del visor **[a]** o la de un televisor normal **[b]** se comprimirá horizontalmente. Usted podrá contemplar imágenes normales en un televisor de pantalla amplia **[c]**.



To release the wide mode

Set STEADY SHOT/16:9 WIDE to OFF.

Notes on wide mode

- In 16:9 WIDE mode, the STEADY SHOT does not work.
- When you record in 16:9 WIDE mode, the date or time indicator will be widened on the wide-screen TV.
- If you dub a tape, the tape is copied in the same mode as the original recording.

Para desactivar el modo de pantalla amplia

Ponga STEADY SHOT/16:9 WIDE en OFF.

Notas sobre el modo de pantalla amplia

- En el modo 16:0 WIDE, el modo de videofilmación estable (STEADY SHOT) no trabajará.
- Cuando videofilme en el modo 16:9 WIDE, el indicador de la fecha o de la hora se verá ampliado en el televisor de pantalla amplia.
- Cuando duplique una videocinta, ésta se copiará con el mismo modo que el de grabación original.

Using the STEADY SHOT function

- CCD-TRV21 only

You can use the Steady Shot to compensate for camera-shake. Do not use the Steady Shot when shooting a stationary object with a tripod.

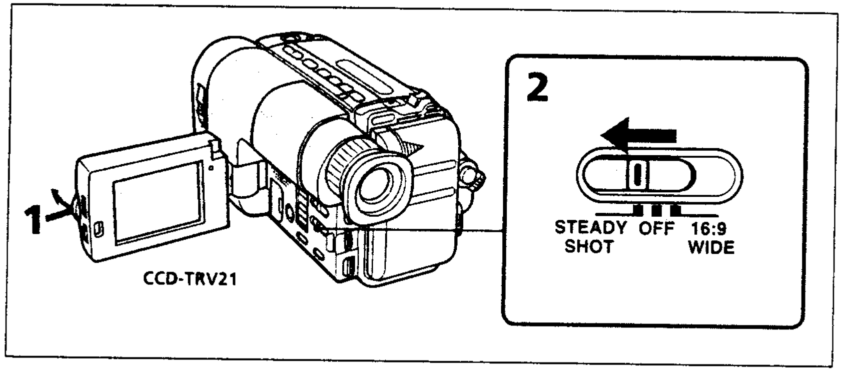
(1) While pressing PUSH OPEN, open the LCD panel.
(2) Set STEADY SHOT/16:9 WIDE to STEADY SHOT.

Utilización de la función de videofilmación estable

- CCD-TRV21 solamente

Usted podrá utilizar la función de videofilmación estable para compensar las sacudidas de la videocámara. No utilice esta función cuando videofilme un motivo estacionario con un trípode.

(1) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido.
(2) Ponga STEADY SHOT/16:9 WIDE en STEADY SHOT.



To release the steady shot

Set STEADY SHOT/16:9 WIDE to OFF.

Notes on the steady shot

- The Steady Shot will not correct excessive camera-shake.
- When you switch the Steady Shot on or off, the exposure may fluctuate.
- When you select 16:9 WIDE mode, the Steady Shot does not work.

Para desactivar la función de videofilmación estable

Ponga STEADY SHOT/16:9 WIDE en OFF.

Notas sobre la videofilmación estable

- La videofilmación estable no corregirá sacudidas excesivas de la videocámara.
- Cuando active o desactive la función de videofilmación estable, es posible que fluctúe la exposición.
- Cuando haya seleccionado el modo 16:9 WIDE, la función de videofilmación estable no trabajará.

Changing the mode settings

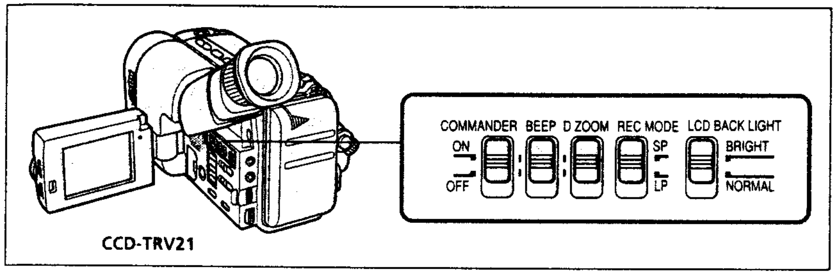
You can change the mode settings to further enjoy the features and functions.

(1) While pressing PUSH OPEN, open the LCD panel. You will find the mode switches.
(2) Set the mode switches to the desired mode.

Cambio de los ajustes de modo

Usted podrá cambiar los ajuste de modo para disfrutar más de las funciones de la videocámara.

(1) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido. Usted podrá ver los selectores de modo.
(2) Ajuste los selectores al modo deseado.



Selecting the mode setting of each item

COMMANDER <ON/OFF>

- Set to ON when using the supplied Remote Commander for the camcorder.
- Set to OFF when not using the Remote Commander.

BEEP <ON/OFF>

- Set to ON so that beeps sound when you start/stop recording, etc.
- Set to OFF when you do not want to hear the beep sound.

D ZOOM <ON/OFF> -CCD-TRV21 only

- Select ON to activate digital zooming.
- Select OFF to not use the digital zoom. The camcorder goes back to 12x zoom.

REC MODE <SP/LP>

- Select SP to record a tape in SP (standard play) mode.
- Select LP to record a tape in LP (long play) mode.

LCD BACK LIGHT <BRIGHT/NORMAL>

- Select BRIGHT to make the LCD screen brighter when shooting/playing back outdoors.
- Normally select NORMAL. The battery life becomes about 10% longer than it is when you select BRIGHT.

Selección de los ajustes de modo en cada ítem

COMMANDER<ON/OFF>

- Seleccione ON cuando desee utilizar el telemando suministrado.
- Seleccione OFF cuando no vaya a utilizar el telemando.

BEEP<ON/OFF>

- Seleccione ON para oír el pitido al iniciar/parar la videofilmación, etc.
- Seleccione OFF si no desea oír el pitido.

D ZOOM <ON/OFF> -CCD-TRV21 solamente

- Seleccione ON para activar el zoom digital.
- Seleccione OFF para no utilizar el zoom digital.
  La videograbadora volverá al zoom de 12 aumentos.

REC MODE <SP/LP>

- Seleccione SP para grabar la cinta en el modo SP (duración estándar).
- Seleccione LP para grabar la cinta en el modo LP (duración larga).

LCD BACK LIGHT <BRIGHT/NORMAL>

- Seleccione BRIGHT para hacer que la pantalla de cristal líquido se vuelva más brillante cuando videofilme/reproduzca en exteriores.
- Normalmente seleccione NORMAL. La duración de la batería será aproximadamente un 10% mayor que cuando haya seleccionado BRIGHT.

Watching on a TV screen

You can use this camcorder as a VCR by connecting it to your TV for playback. When monitoring the playback picture by connecting the camcorder to your TV, we recommend you to use the house current for the power source.

While playing back on a TV screen, close the LCD panel. Otherwise, picture distortion may occur.

Connecting directly to a VCR / TV with Video / Audio input jacks

If your TV is already connected to a VCR
Open the jack cover and connect the camcorder to the LINE IN inputs on the VCR by using the supplied A/V connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector on the TV to VCR.

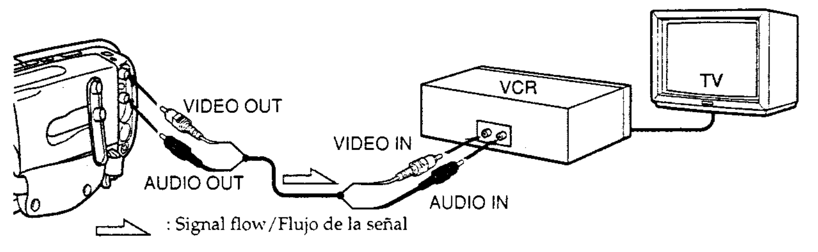
Contemplación en la pantalla de un televisor

Usted podrá utilizar esta videocámara como videograbadora conectándola a su televisor para reproducción. Para contemplar las imágenes de reproducción conectando la videocámara a su televisor, le recomendamos que utilice la corriente de la red como fuente de alimentación.

Cuando reproduzca en la pantalla de un televisor, cierre la pantalla de cristal líquido. De lo contrario, la imágenes podrían distorsionarse.

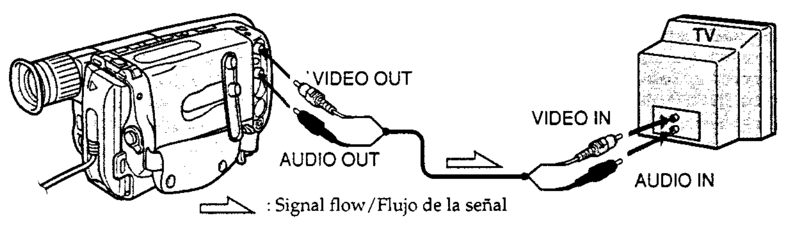
Conexión directa a una videograbadora/televisor con tomas de entrada de audio/vídeo

Si su televisor ya está conectado a una videograbadora
Abra la cubierta de tomas y conecte la videocámara a las entradas LINE IN de la videograbadora utilizando el cable conector de audio/vídeo suministrado. Ponga el selector de entrada de la videograbadora en LINE. Ponga el selector TV/VCR del televisor en VCR.



If you connect directly to TV
Connect the camcorder to the inputs on the TV by using the supplied A/V connecting cable. Set the TV/VCR selector on the TV to VCR.

Para realizar la conexión directa a un televisor
Conecte la videocámara a las entradas del televisor utilizando el cable de audio/vídeo suministrado. Ponga el selector TV/VCR del televisor en VCR.



To connect to a VCR or TV without Video/Audio input jacks
Use an RFU adaptor (not supplied).

Para realizar la conexión a una videograbadora o a un televisor sin tomas de entrada de audio/vídeo
Utilice un adaptador de RFU (no suministrado).

Editing onto another tape

You can create your own video program by editing with any other 8 mm, Hi8 Hi8, VHS VHS, SVHS S-VHS, VHSC VHSC, SVHSC S-VHSC, or β Betamax VCR that has video/audio inputs.

Turn down the volume of the camcorder while editing. Otherwise, picture distortion may occur.

After connecting the camcorder to the VCR,

(1) Set the POWER switch to PLAYER.
(2) Insert a blank tape (or a tape you want to record over) into the VCR and insert your recorded tape into the camcorder.
(3) Play back the recorded tape on the camcorder until you locate the point where you want to start editing, then press **II** to put the camcorder in playback pause mode.
(4) On the VCR, locate the recording start point and put the VCR in recording pause mode.
(5) Press **II** on the camcorder and VCR simultaneously to start editing.

To edit more scenes

Repeat steps 3 to 5.

To stop editing

Press ■ on both the camcorder and VCR.

Edición en otra cinta

Usted podrá crear su propio programa de vídeo editando con una videograbadora de formato de 8mm 8, 8mm de Hi8 Hi8, VHS VHS, S-VHS SVHS, VHSC VHSC, S-VHSC SVHSC o Betamax β que disponga de entradas de audio/vídeo.

Mantenga reducido el volumen de la videocámara durante la edición. De lo contrario, las imágenes podrían distorsionarse.

Después de conectar la videocámara a la videograbadora.

(1) Deslice el selector POWER hasta PLAYER.
(2) Inserte un videocassette en blanco (o una cinta en la que desee realizar la regrabación) en la videograbadora y la cinta grabada en la videocámara.
(3) Reproduzca la cinta grabada en la videocámara hasta localizar el punto en el que desee comenzar la edición, y después presione **II** para poner la videocámara en el modo de reproducción en pausa.
(4) En la videograbadora, localice el punto de comienzo de la grabación, y ponga la videograbadora en el modo de grabación en pausa.
(5) Presione simultáneamente **II** de la videocámara y la videograbadora para comenzar la edición.

Para editar más escenas

Repita los pasos 3 a 5.

Para parar la edición

Presione ■ STOP de la videocámara y la videograbadora.

Additional Information

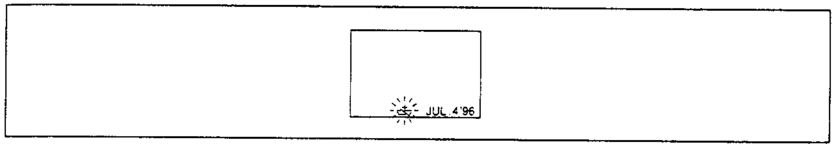
Changing the lithium battery in the camcorder

Your camcorder is supplied with a lithium battery installed. When the battery becomes weak or dead, the ☼ indicator flashes in the viewfinder or on the LCD screen for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of any other battery may present a risk of fire or explosion.**
The lithium battery for the camcorder lasts for about 1 year under normal operation. (The lithium battery that comes installed at the factory may not last 1 year.)

Información adicional

Reemplazo de la pila de litio de la videocámara

Su videocámara se suministra con una pila de litio instalada. Cuando la pila se debilite o agote, en el visor o en la pantalla de cristal líquido parpadeará el indicador ☼ durante unos 5 segundos cuando ponga el selector POWER en CAMERA. En este caso, **reemplace la pila por otra de litio CR2025 Sony o DL-2025 Duracell. El empleo de otra pila puede suponer un riesgo de incendio o explosión.**
La pila de litio para la videocámara durará aproximadamente 1 año en condiciones normales de funcionamiento. (La pila de litio instalada en fábrica en la videocámara puede que no dure 1 año.)

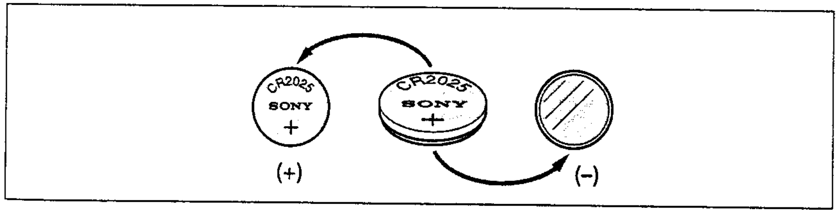


Note on lithium battery

Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**

Nota sobre la pila de litio

Tenga en cuenta que la pila de litio posee un terminal positivo (+) y otro negativo (–) como se ilustra. **Cerciórese de colocar la pila de litio de forma que los terminales de la pila coincidan con los de la videocámara.**



WARNING
The battery may explode if mistreated. Do not recharge, disassemble, or dispose of in fire.

Caution
Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

ADVERTENCIA
Si trata mal la pila, puede explotar. No recargue, desarme, ni tire la pila al fuego.

Precaución
Mantenga la pila de litio fuera de alcance de los niños. Si alguien traga la pila, consulte inmediatamente a un médico.

Changing the lithium battery in the camcorder

Reemplazo de la pila de litio de la videocámara

Changing the lithium battery

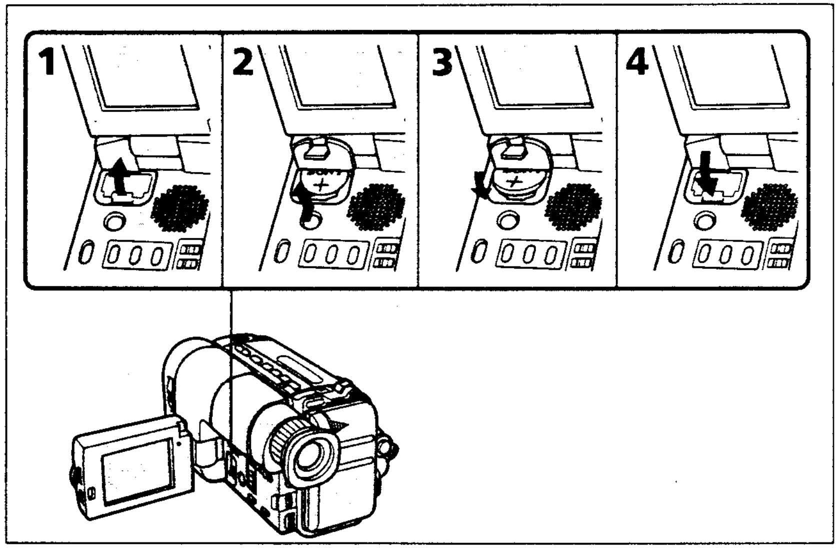
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time .

(1) Open the lid of the lithium battery compartment.
(2) Push the battery in once and pull it out from the holder.
(3) Install the new lithium battery with the positive (+) side facing out.
(4) Close the lid.

Reemplazo de la pila de litio

Durante el reemplazo de la pila de litio, mantenga la batería u otra fuente de alimentación conectada. De lo contrario, deberá reajustar la fecha y la hora.

(1) Abra la tapa del compartimiento de la pila de litio.
(2) Empuje la pila una vez y extráigala de su compartimiento.
(3) Coloque una pila de litio nueva con la cara positiva (+) hacia afuera.
(4) Cierre la tapa.



Resetting the date and time

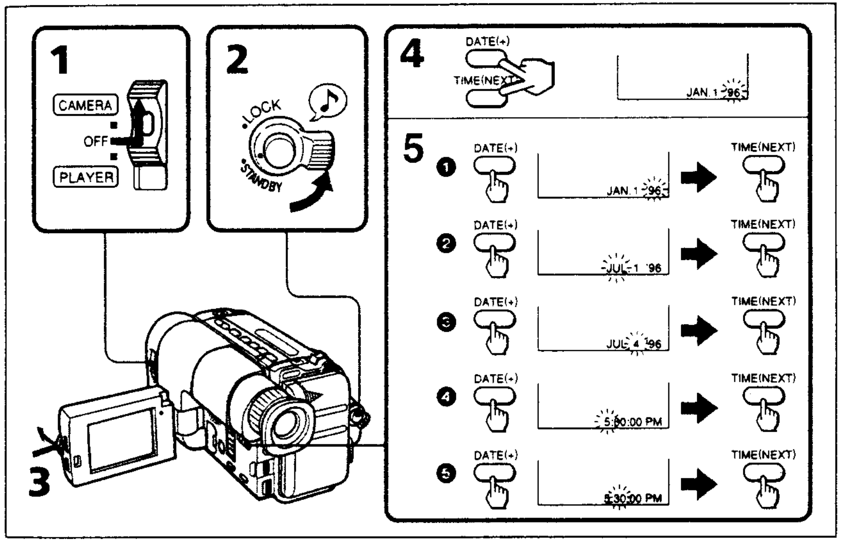
Reset the date and time using the DATE(+) and TIME(NEXT) buttons.

(1) Set the POWER switch to CAMERA.
(2) Turn STANDBY up.
(3) While pressing PUSH OPEN, open the LCD panel.
(4) Press DATE(+) and TIME(NEXT) simultaneously until the year indicator flashes on the LCD screen or in the viewfinder.
(5) Set year, month, day, time, minute by pressing DATE(+) and TIME(NEXT). Note that when you keep DATE(+) pressed, the digits advance faster.

Reajuste de la fecha y la hora

Reajuste la fecha y la hora utilizando las teclas DATE(+) y TIME(NEXT).

(1) Deslice el selector POWER hasta CAMERA.
(2) Gire STANDBY hacia arriba.
(3) Manteniendo presionada PUSH OPEN, abra la pantalla de cristal líquido.
(4) Presione simultáneamente DATE(+) y TIME(NEXT) hasta que en la pantalla de cristal líquido o en el visor parpadee el indicador del año.
(5) Ajuste el año, mes, día, hora y minutos presionando DATE(+) y TIME(NEXT). Tenga en cuenta que si mantiene presionada DATE(+), los dígitos avanzarán con mayor rapidez.



To correct the date and time setting

Repeat steps 4 and 5.

To check the date and time

Press DATE(+) to display the date indicator. Press TIME(NEXT) to display the time indicator. When you press the same button again, the indicator goes out.

The year indicator changes as follows:

$$'96 \longrightarrow '97 \cdots\cdots \rightarrow '25$$

Note on the time indicator

The internal clock of the camcorder operates on a 12-hour cycle.
12:00:00 AM stands for midnight
12:00:00 PM stands for noon.

Para corregir los ajustes de la fecha y la hora

Repita los pasos 4 y 5.

Para comprobar la fecha y la hora

Presione DATE(+) de forma que se visualice el indicador de la fecha. Presione TIME(NEXT) para visualizar el indicador de la hora. Cuando vuelva a presionar la misma tecla, el indicador desaparecerá.

El indicador del año cambiará como sigue:

$$'96 \longrightarrow '97 \cdots\cdots \rightarrow '25$$

Nota sobre el indicador de la hora

El reloj interno de la videocámara trabaja con un ciclo de 12 horas.
12:00:00 AM es la medianoche.
12:00:00 PM es el mediodía.

Playback modes

The playback mode (SP/LP) is selected automatically according to the recording system in which the tape has been recorded. The quality of the recorded picture in LP mode, however, will not be as good as that in SP mode.

Recording mode
When you play back a tape recorded in LP mode, the LP indicator lights up in the viewfinder or on the LCD screen.

Foreign 8 mm video
You cannot play back tapes recorded on a different TV color system. Because the TV color systems differ from country to country, you may not be able to play back foreign prerecorded tapes. Refer to the list of "Using your camcorder abroad" to check the TV color system of foreign countries.

Modos de reproducción

El modo de reproducción (SP/LP) se seleccionará automáticamente de acuerdo con el sistema de grabación en el que se haya grabado la cinta. Sin embargo, la calidad de las imágenes grabadas en el modo LP no será tan buena como la del modo SP.

Modo de grabación
Cuando reproduzca una cinta grabada en el modo LP, en el visor o en la pantalla de cristal líquido aparecerá el indicador LP.

Videocassettes de 8 mm de otro país
Usted no podrá reproducir cintas grabadas en un sistema de color de televisión diferente. Como los sistemas de color de televisión difieren de país a país, no podrá reproducir cintas grabadas en el extranjero. Con respecto al sistema de color de televisión de otros países, consulte "Utilización de la videocámara en el extranjero".

Tips for using the battery pack

This section shows you how you can get the most out of your battery pack.

Preparing the battery pack

Always carry additional batteries
Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery life is shorter in cold environment
Battery efficiency is decreased, and the battery will be used up more quickly, if you are recording in cold environment.

To save battery power
Turn the STANDBY switch on the camcorder down when not recording to save battery power. A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking through the viewfinder lens or on the LCD screen, the lens moves automatically and the battery is used. The battery is also used when a cassette is inserted or removed.

Consejos para utilizar la batería

En esta sección se explica la forma de obtener el máximo rendimiento de la batería.

Preparación de la batería

Lleve siempre baterías adicionales
Prepare suficientes baterías como para poder alimentar la videocámara el doble o el triple del tiempo de videofilmación planeado.

La duración de la batería se acortará en climas fríos.
La eficacia de la batería disminuirá y se gastará con mayor rapidez si graba en climas fríos.

Para ahorrar batería
Gire el interruptor STANDBY de la videocámara hacia abajo cuando no vaya a videofilmar a fin de ahorrar batería.
Aunque detenga y reinicie la videofilmación, obtendrá una grabación sin transiciones bruscas entre las escenas. Mientras encuadre el motivo o seleccione un ángulo, u observe a través del visor o de la pantalla de cristal líquido, el objetivo se moverá automáticamente y se utilizará la batería.
La batería también se utilizará al insertar o extraer un videocassette.

Tips for using the battery pack

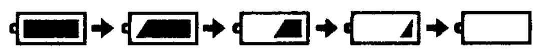
When to replace the battery

While you are using your camcorder, the remaining battery indicator in the viefinder or on the LCD screen. decreases gradually as battery power is used up.

Consejos para utilizar la batería

Cuándo reemplazar la batería

Mientras esté utilizando la videocámara en el modo, el indicador de carga restante de la batería del visor o de la pantalla de cristal líquido disminuirá gradualmente a medida que se reduzca la carga de la batería.



When the remaining battery indicator reaches the lowest point, the ꝏ indicator appears and starts flashing in the viewfinder or on the LCD screen.
When the ꝏ indicator in the viewfinder or on the LCD screen changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack has been replaced.

Note on the remaining battery indicator
The remaining battery indicator of the camcorder may indicate a different remaining capacity from that of the battery pack with its own indicator (not supplied). The indicator on the battery pack is more accurate.

Notes on the rechargeable battery pack

CAUTION
Never leave the battery pack in temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight.

Cuando el indicador de carga restante de la batería llegue al punto mínimo, en el visor o en la pantalla de cristal líquido aparecerá el indicador ꝏ y comenzará a parpadear.
Cuando el indicador ꝏ en el visor cambie de parpadeo lento a rápido mientras grabe, deslice el selector POWER de la videocámara hasta OFF y reemplace la batería. Deje el videocassette en la videocámara para obtener una grabación sin transiciones bruscas entre las escenas después de haber reemplazado la batería.

Nota sobre el indicador de carga restante de la batería
Es posible que este indicador de la videocámara señale una capacidad restante diferente a la indicada por el propio indicador de la batería (no suministrada). El indicador de la batería es más preciso.

Notas sobre la batería

Precaución
No deje nunca la batería en lugares con una temperatura superior a 60°C, como en el interior de un automóvil aparcado al sol, ni sometido a la luz solar directa.

Tips for using the battery pack

The battery heats up
During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern and is normal.

Battery pack care
- **Remove the battery pack from the camcorder after using it**, and keep it in a cool place. When the battery pack is installed to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF. This shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

How to use the switch on the battery pack
When the switch is supplied with the battery pack ([a] on page 47), you can use it to find whether the battery pack is charged or not. Set the switch to the "no mark" position when charging is completed. Set the switch to the "red mark" position when the battery is used up (or in whichever direction you want to remind yourself).

The life of the battery pack
If the battery indicator flashes rapidly just after turning on the camcordrer with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging temperature
You should charge batteries at temperatures from 10°C to 30°C (from 50°F to 86°F). Lower temperatures require a longer charging time.

Consejos para utilizar la batería

La batería se calentará
Durante la carga o la grabación, la batería se calentará. Esto se debe a la energía generada y al cambio químico que se produce en el interior de la batería, y no significa problema alguno, es normal.

Cuidado de la batería
- **Después de haber empleado la batería quítela de la videocámara** y guárdela en un lugar fresco. Mientras la batería esté fijada a la videocámara, circulará una pequeña cantidad de corriente incluso aunque el selector POWER esté en OFF. Esto acortará la duración útil de la batería.
- La batería estará siempre descargándose, incluso aunque no se utilice. Por lo tanto, se recomienda cargarla antes de utilizar la videocámara.

Utilización del señalador de la batería
Si la batería posee un señalador ([a] de la pág. 47), usted podrá utilizarlo para saber si la batería está cargada o no. Ponga el selector en la posición "sin marca" cuando finalice la carga.
Póngalo en la posición de la "marca roja" cuando la batería esté descargada completamente (o en el sentido que desee y pueda recordar usted mismo).

Vida útil de la batería
Si el indicador de la batería parpadea rápidamente después de haber conectado la alimentación de la videocámara con una batería completamente cargada, habrá que reemplazarla por otra nueva completamente cargada.

Temperatura durante la carga
Cargue la batería a una temperatura comprendida entre 10 y 30°C. A bajas temperaturas, la carga tardará más en realizarse.

Notes on charging

A brand-new battery
A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

After long storage
Recharge the battery pack after a long period of storage. If the battery pack is charged fully but not used for a long time (about 1 year), it becomes discharged. Charge it again, but in this case the battery life will be shorter than normal. After several charging and discharging cycles, the battery life will recover its original capacity.

Notes on the terminals

If the terminals (metal parts on the back) are not clean, the battery charge duration will be shortened.
When the terminals are not clean or when the battery pack has not been used for a long time, repeatedly install and remove the battery pack a few times. This improves the contact condition. Also, wipe the + and – terminals with a soft cloth or paper.

Be Sure to Observe the Following
- **To prevent an accident caused by a short circuit, do not allow metal objects such as a necklace to touch the battery terminals. When carrying the battery pack, attach to the terminal cover. [b]**
- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor try to disassemble the battery pack.
- Do not expose the battery pack to any mechanical shock.

Notas sobre la carga

Baterías nuevas
Una batería nueva no estará cargada. Antes de utilizarla, cárguela completamente.

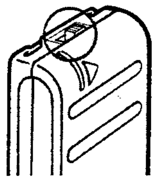
Después de no haber utilizado una batería durante mucho tiempo
Recargue la batería después de no haberla utilizado durante mucho tiempo. Si una batería completamente cargada no se utiliza durante mucho tiempo (aproximadamente 1 año), se descargará. Vuelva a cargar la batería, pero en este caso su duración será más corta de lo normal. Después de varios ciclos de carga y descarga, la batería recuperará su capacidad original.

Notas sobre los terminales

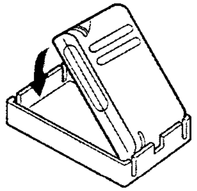
Si los terminales (partes metálicas de la parte posterior) no están limpios, la duración de la carga de la batería se acortará.
Cuando los terminales no estén limpios o no haya utilizado la batería durante mucho tiempo, fije y quite la batería varias veces. Esto mejorará el contacto. Además, frote los terminales + y – con un paño o un papel suave.

Tenga en cuenta lo siguiente
- **Para prevenir accidentes debido a un cortocircuito, no deje que objetos metálicos como un collar entren en contacto con los terminales de la batería. Cuando lleve la batería, fíjele la cubierta de terminales. [b]**
- Mantenga la batería alejada del fuego.
- Mantenga la batería seca.
- No abra ni desarme la batería.
- No someta la batería a ninguna clase de golpes.

[a]



[b]



Maintenance information and precautions

Información sobre el mantenimiento y precauciones

Moisture condensation

If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. Please take the following precautions.

Inside the camcorder

When the ▣ and ⏏ indicators flash in the viewfinder or on the LCD screen, moisture has condensed inside the camcorder. If this happens, no other functions except for tape ejection will work.

Eject the tape, turn off the camcorder and leave it with the cassette compartment open for at least one hour. The camcorder can be used again if the ▣ indicator does not appear when the power is turned on again.

On the lens

If moisture condenses on the lens, no indicator appears, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to prevent moisture condensation

When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Condensación de humedad

Si traslada directamente la videocámara de un lugar frío a otro cálido, es posible que se condense humedad en su interior, en la superficie de la cinta, o en el objetivo. En tales condiciones, la cinta puede adherirse al tambor de cabezas y estropearse, o la videocámara puede no funcionar adecuadamente. Para evitar la posibilidad de daños en estas circunstancias, la videocámara dispone de sensores de humedad. Tenga en cuenta las precauciones siguientes.

En el interior de la videocámara

Cuando parpadeen los indicadores ▣ y ⏏ en el visor o en la pantalla de cristal líquido, se habrá condensado humedad en la videocámara. Cuando suceda esto, no trabajará ninguna función, excepto la de expulsión del videocassette.

Extraiga el videocassette, desconecte a alimentación de la videocámara, y deje así la videocámara con el compartimiento del videocassette abierto durante una hora por lo menos. La videocámara podrá volver a utilizarse si no aparece el indicador ▣ cuando vuelva a conectar su alimentación.

En el objetivo

Si se condensa humedad en el objetivo, no aparecerá ningún indicador, pero la imagen se volverá borrosa. Desconecte la alimentación y no utilice la videocámara durante aproximadamente 1 hora.

Cómo prevenir la condensación de humedad

Cuando traslade la videocámara de un lugar frío a otro cálido, colóquela en una bolsa de plástico y deje que se adapte a las condiciones ambientales de la sala durante cierto tiempo.

(1) No se olvide de cerrar firmemente la bolsa de plástico que contiene la videocámara.

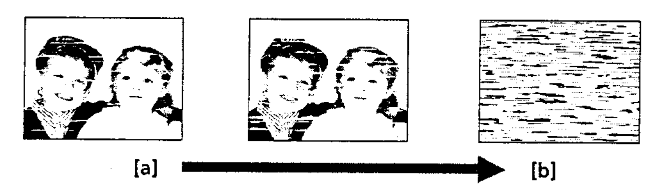
(2) Saque la videocámara de la bolsa cuando la temperatura del aire del interior de la bolsa haya alcanzado la ambiental (después de 1 hora aproximadamente).

Video head cleaning

To ensure normal recording and clear pictures, clean the video heads. When ⊗ appears in the viewfinder or on the LCD screen in CAMERA mode or playback pictures are "noisy" or hardly visible, the video heads may be dirty.

Limpieza de las cabezas de vídeo

Para asegurar imágenes claras, limpie las cabezas de vídeo. Cuando en el visor o en la pantalla de cristal líquido aparezca ⊗ en el modo CAMERA o las imágenes reproducidas sean "ruidosas" o difíciles de ver, es posible que las cabezas de vídeo estén sucias.



[a] Slight dirty
[b] Dirty

If this happens, clean the video heads with the Sony V8-25CLH cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times in one session.)

Caution

Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note

If the V8-25CLH cleaning cassette is not available in your area, consult your nearest Sony dealer.

[a] Ligeramente sucias
[b] Sucias

Cuando aparezcan estas imágenes, limpie las cabezas de vídeo con un cassette de limpieza V8-25CLH Sony (no suministrado). Después de la limpieza, si las imágenes siguen "ruidosas", repita la limpieza. (No repita la limpieza más de 5 veces en una sesión.)

Precaución

No utilice cassettes de limpieza de tipo húmedo adquiribles en tiendas del ramo, ya que podrían dañar las cabezas de vídeo.

Nota

Si el cassette de limpieza V8-25CLH no está disponible en su zona, consulte a un centro de servicio Sony.

Maintenance information and precautions

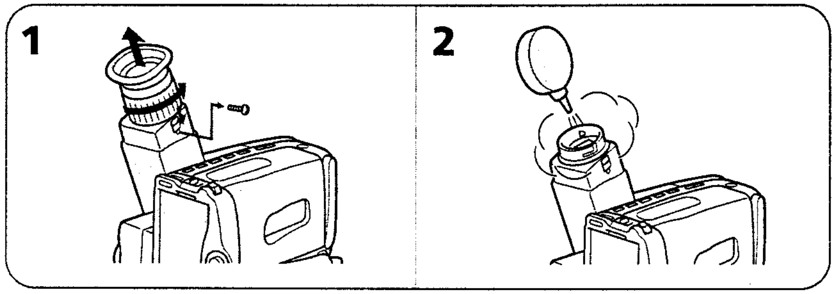
Información sobre el mantenimiento y precauciones

Removing dust from inside the viewfinder

(1) Remove the screw with a screwdriver (not supplied). Then, while sliding the RELEASE knob, turn the eyecup in the direction of the arrow and pull it out.
(2) Clean the surface with a commercially available blower.

Para quitar el polvo del interior del visor

(1) Quite el tornillo con un destornillador (no suministrado). Después, gire el ocular en el sentido de la flecha mientras mantenga deslizado el mando RELEASE y tire del ocular.
(2) Limpire la superficie con un soplador adquirible en tiendas del ramo.

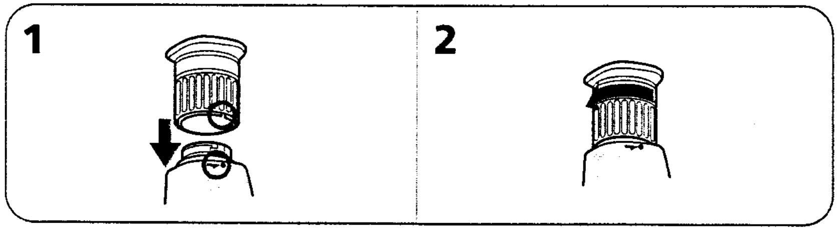


To reattach the eyecup

(1) Align the groove on the eyecup with the • mark on the barrel.
(2) Turn the eyecup in the direction of the arrow. Then, replace the screw.

Para volver a colocar el ocular

(1) Alinee la ranura del ocular con la marca • del tubo.
(2) Gire el ocular en el sentido de la flecha. Después vuelva a colocar el tornillo.



Caution
Do not remove any other screws. You may remove only the screws to remove the eyecup.

Precaución
No quite ningún otro tornillo. Usted solamente deberá quitar el tornillo para desmontar el ocular.

Precautions

Camcorder operation

- Operate the camcorder using 6.0 V (battery pack), or 7.5 V (AC power adaptor).
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by your nearest Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camcorder.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.
- Do not push the LCD screen.
- If the camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using the camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On handling tapes

Do not insert anything in the small holes on the rear of the cassette. These holes are used to sense the type of tape, thickness of tape, and if the recording tab is out or in.

Camcorder care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the cassette. Periodically turn on the power, operate the camera and player sections and play back a tape for about 3 minutes.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

Precauciones

Operación de la videocámara

- Alimente la videocámara con 6,0 V (batería) o 7,5 V (adaptador de alimentación de CA).
- Si dentro de la videocámara cae algún objeto sólido o líquido, desenchufe la videocámara y haga que sea revisada por su proveedor Sony más cercano antes de reutilizarla.
- Evite tratos bruscos o golpes. Tenga especial cuidado con el objetivo.
- Cuando no vaya a utilizar la videocámara, ponga el selector POWER en OFF.
- No utilice la videocámara envuelta, porque se recalentaría.
- Mantenga la videocámara alejada de campos magnéticos intensos y vibraciones mecánicas.
- No empuje la pantalla de cristal líquido.
- Si utiliza la videocámara en un lugar frío, es posible que en la pantalla de cristal líquido aparezca unas imagen residual. Esto no significa mal funcionamiento.
- Cuando utilice la videocámara, la parte posterior de la pantalla de cristal líquido puede calentarse. Esto no significa mal funcionamiento.

Cuidado del videocassette

No inserte nada en los pequeños orificios de la parte posterior del videocassette. Estos orificios se utilizan para detectar el tipo de cinta, su grosor, y si la lengüeta de grabación está o no deslizada.

Cuidados de la videocámara

- Cuando no vaya a utilizar la videocámara durante mucho tiempo, desconecte la fuente de alimentación y extraiga el videocassette. Conecte periódicamente la alimentación, haga funcionar las secciones de la videocámara y el reproductor, y reproduzca una cinta durante unos 3 minutos.
- Limpie el polvo del objetivo con un cepillo suave. Elimine las huellas dactilares con un paño suave.
- Limpie el cuerpo de la videocámara con un paño suave y seco, o ligeramente humedecido en una solución muy diluida de detergente. No emplee ningún tipo de disolvente ya que podría dañar el acabado.

Maintenance information and precautions

AC power adaptor

Charging

- Attach the battery pack firmly.
- Place the battery pack on a flat surface without vibration during charging.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the power cord, pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Información sobre el mantenimiento y precauciones

Adaptador de alimentación de CA

Carga

- Fije firmemente la batería.
- Cologue la batería sobre una superficie plana sin vibraciones durante la carga.

Otros

- Cuando no vaya a utilizar la unidad durante mucho tiempo, desenchúfela de la toma de la red. Para desconectar el cable de alimentación (de la red), tire del enchufe. No tire nunca del propio cable.
- No utilice la unidad con el cable dañado, después de haberla dejado caer, o cuando esté dañada.
- No doble a la fuerza el cable de alimentación de CA, ni coloque objetos pesados sobre él, ya que podría dañar el cable y provocar incendios o descargas eléctricas.
- Cerciórese de que ningún objeto metálico entre en contacto con las partes metálicas de la placa conectora, ya que se podría producir un cortocircuito que dañaría la unidad.
- Mantenga siempre limpios los contactos metálicos.
- No desarme la unidad.
- No golpee ni deje caer la unidad.
- Cuando esté utilizando la unidad, especialmente durante la carga, manténgala alejada de receptores de AM y equipos de vídeo porque perturbaría la recepción de AM y la operación de vídeo.
- La unidad se calentará durante su utilización. Esto es normal.
- No coloque la unidad en lugares:
  - Extremadamente cálidos o fríos
  - Polvorientos o sucios
  - Muy húmedos
  - Sujetos a vibraciones

Si surge alguna dificultad, desenchufe la unidad y póngase en contacto con su proveedor Sony.

Using your camcorder abroad

Each country has its own electricity and TV color systems. Before using your camcorder abroad, check the following points:

Power sources

You can use your camcorder in any country with the supplied AC power adaptor within 110 V to 240 V AC, 50/60 Hz.

Difference in color systems

This camcorder is an NTSC system-based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV or a PAL M system-based TV with an NTSC/PAL M transcoder. Check the following list.

NTSC system countries
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system countries
Australia, Austria, Belgium, China, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Thailand, etc.

PAL M system country
Brazil

PAL N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, Czech Republic, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

Utilización de la videocámara en el extranjero

Cada país posee su propio sistema de suministro eléctrico y sistema de televisión en color. Antes de utilizar su videocámara en el extranjero, verifique los puntos siguientes:

Fuentes de alimentación

Usted podrá utilizar su videocámara con el adaptador de alimentación de CA suministrado en cualquier país donde la tensión de la red sea de 110 a 240 V CA, 50/60 Hz.

Diferencia en los sistemas de color

Esta videocámara está basada en el sistema NTSC. Si desea ver la imagen reproducida en un televisor, éste deberá estar basado en el sistema NTSC. PAL M con un transcodificador NTSC/PAL M. Compruebe la lista siguiente.

Países con el sistema NTSC
Bolivia, Canadá, Centroamérica, Colombia, Corea, Chile, Ecuador, EE.UU., Filipinas, Islas Bahamas, Jamaica, Japón, México, Perú, Surinam, Taiwan, Venezuela, etc.

Países con el sistema PAL
Alemania, Australia, Austria, Bélgica, China, Dinamarca, España, Finlandia, Gran Bretaña, Holanda, Hong Kong, Italia, Kuwait, Malasia, Noruega, Nueva Zelanda, Portugal, Singapur, Suecia, Suiza, Tailandia, etc.

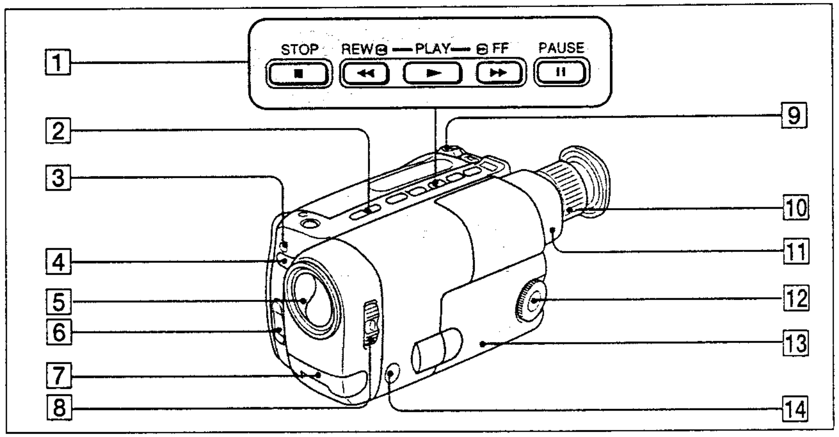
País con el sistema PAL M
Brasil

Países con el sistema PAL N
Argentina, Paraguay, Uruguay

Países con el sistema SECAM
Bulgaria, Francia, Guyana, Hungría, Irán, Iraq, Mónaco, Polonia, República de Checoslovaquia, República de Eslovaquia, Rusia, Ucrania, etc.

Identifying the parts

Identificación de las partes



1 **Tape transport buttons (p.22, 23, 24)**
■ STOP
◀◀ REW (rewind)
▶ PLAY (playback)
▶▶ FF (fast forward)
❚❚ PAUSE
These buttons will function in PLAYER mode.

2 **EDITSEARCH button (p.20)**

3 **Recording lamp**

4 **Remote sensor (p.68)**
Aim the Remote Commander here for remote control.

5 **Lens cover**

6 **Power zoom button (p.18)**
Use this button when recording in a low position.

7 **Built-in microphone**

8 **POWER switch (p.11, 22)**

9 **Power zoom lever (p.15)**

10 **Viewfinder adjustment ring (p.13)**

11 **Viewfinder (p.13, 50, 70)**

12 **PROGRAM AE dial (p.32)**

13 **LCD panel (p.17)**

14 **BACK LIGHT button (p.30)**

1 **Teclas de transporte de la cinta (pág. 22, 23, 24)**
Parada (■ STOP)
Rebobinado (◀◀ REW)
Reproducción (▶ PLAY)
Avance rápido (▶▶ FF)
Pausa (❚❚ PAUSE)
Estas teclas no funcionarán en el modo PLAYER.

2 **Tecla de búsqueda para edición (EDITSEARCH) (pág. 20)**

3 **Lámpara indicadora de videofilmación**

4 **Sensor de control remoto (pág. 68)**
Apunte hacia él con el telemando.

5 **Tapa del objetivo**

6 **Tecla del zoom motorizado (pág. 18)**
Apunte hacia él con el telemando.

7 **Micrófono incorporado**

8 **Selector de alimentación (POWER) (pág. 11, 12)**

9 **Palanca del zoom motorizado (pág. 15)**

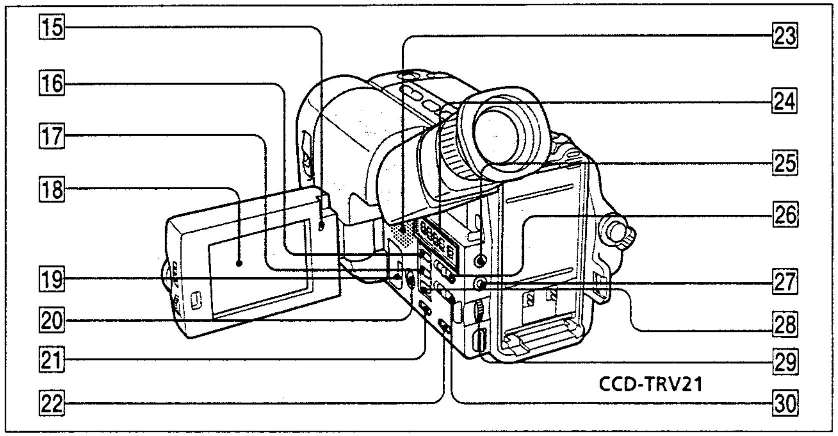
10 **Anillo de ajuste del visor (pág. 13)**

11 **Visor (pág. 13, 50, 70)**

12 **Dial de exposición automática programada (PROGRAM AE) (pág. 32)**

13 **Pantalla de cristal líquido (pág. 17)**

14 **Tecla de videofilmación a contraluz (BACK LIGHT) (pág. 30)**



15 **Recording lamp**

16 **DATE (+) button (p.29)**

17 **TIME (NEXT) button (p.29)**

18 **LCD screen (p.22, 70)**

19 **Lithium battery compartment (p.42)**

20 **DISPLAY button (p.23)**

21 **COUNTER RESET button (p.14)**

22 **END SEARCH button (p.24)**

23 **Speaker**

24 **Mode switches (p.37)**

25 **LANC ⏻ control jack**
⏻ stands for Local Application Control Bus system. The ⏻ control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the connectors indicated as CONTROL L or REMOTE.

26 **START/STOP MODE switch (p.11, 13, 33)**

27 **🎧 (earphone) jack (p.23)**

28 **TITLE button (p.34)**

29 **VOL (speaker volume) control (p.22)**

30 **STEADY SHOT/16:9 WIDE switch (p.35)**
(CCD-TRV21 only)

15 **Lámpara indicadora de videofilmación**

16 **Tecla de ajuste de la fecha [DATE (+)] (pág. 29)**

17 **Botón de ajuste de la hora (paso siguiente) [TIME (NEXT)] (pág. 29)**

18 **Pantalla de cristal líquido (pág. 22, 70)**

19 **Compartimiento de la pila de litio (pág. 42)**

20 **Tecla de visualización (DISPLAY) (pág. 23)**

21 **Tecla de puesta a cero del contador (COUNTER RESET) (pág. 14)**

22 **Tecla de búsqueda de fin (END SEARCH) (pág. 24)**

23 **Altavoz**

24 **Selectores de modo (pág. 37)**

25 **Toma de control remoto (LANC ⏻)**
⏻ significa sistema de control de bus de aplicación local. La toma ⏻ se utiliza para controlar el movimiento de la cinta de equipos de vídeo y de dispositivos periféricos conectados a la misma. Esta toma posee la misma función que los conectores indicados como CONTROL L o REMOTE.

26 **Selector de modo de inicio/parada (START/STOP MODE) (pág. 11, 13, 33)**

27 **Toma para auricular (🎧) (pág. 23)**

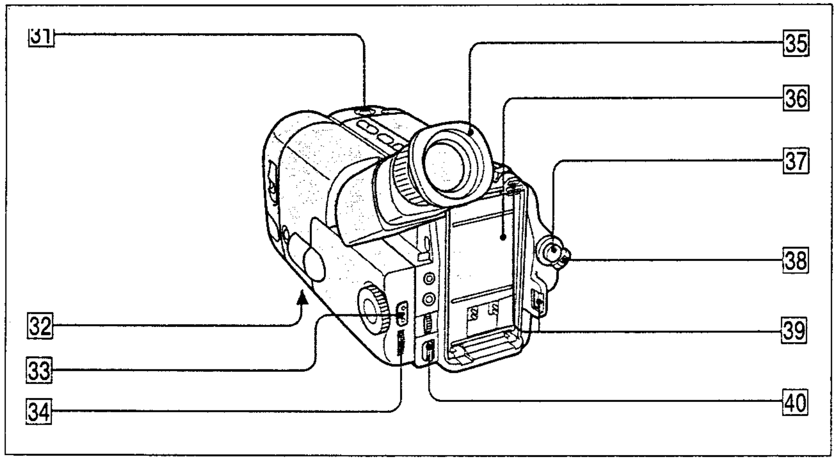
28 **Botón de título (TITLE) (pág. 34)**

29 **Control de volumen del altavoz (VOL) (pág. 22)**

30 **Selector de modo de videofilmación estable/pantalla amplia (STEADY SHOT/16:9 WIDE) (pág. 35)** (CCD-TRV21 solamente)

Identifying the parts

Identificación de las partes



31 **START/STOP button (p.18)**
Use this button when recording in a low position.

32 **Tripod receptacle (p.19)**

33 **PUSH OPEN button (p.17, 22)**

34 **LCD BRIGHT dial (p.17)**

35 **Eyecup (p.18, 50)**

36 **Battery mounting surface (p.9)**

37 **START/STOP button (p.11)**

38 **STANDBY switch (p.11)**

39 **Hooks for shoulder strap (p.65)**

40 **BATT (battery release) knob (p.9)**

31 **Tecla de inicio/parada (START/STOP) (pág. 18)**
Utilice esta tecla cuando videofilme en posición baja.

32 **Rosca para trípode (pág. 19)**

33 **Mando de apertura (PUSH OPEN) (pág. 17, 22)**

34 **Control de brillo de la pantalla de cristal líquido (LCD BRIGHT) (pág. 17)**

35 **Ocular (pág. 18, 50)**

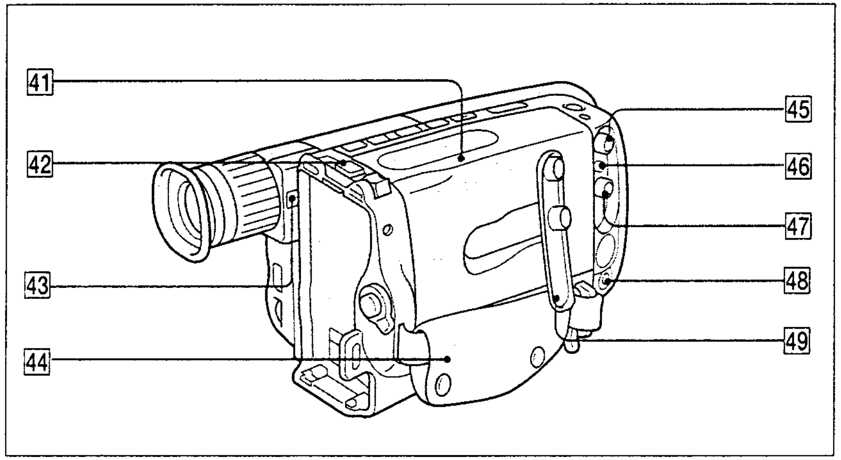
36 **Superficie de montaje de la batería (pág. 9)**

37 **Tecla de inicio/parada (START/STOP) (pág. 11)**

38 **Interruptor de espera (pág. 11)**

39 **Ganchos para la bandolera (pág. 65)**

40 **Mando de expulsión de la batería (BATT) (pág. 9)**



41 **Cassette compartment (p.10)**

42 **EJECT knob (p.10)**

43 **Eyecup release knob (p.50)**

44 **Grip strap (p.18)**

45 **VIDEO OUT jack (p.38, 39)**

46 **RFU DC OUT (RFU adaptor DC out) jack**

47 **AUDIO OUT jack (p.38, 39)**

48 **MIC (microphone) jack**
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

49 **Jack cover**

Attaching the shoulder strap

Attach the supplied shoulder strap to the hooks for the shoulder strap (39 on page 64).

41 **Compartimiento del videocassette (pág. 10)**

42 **Mando de expulsión del videocassette (EJECT) (pág. 10)**

43 **Mando de liberación del ocular (pág. 50)**

44 **Correa de la empuñadura (pág. 18)**

45 **Toma de salida de vídeo (VIDEO OUT) (pág. 38, 39)**

46 **Toma de salida de CC para el adaptador de RF (RFU DC OUT)**

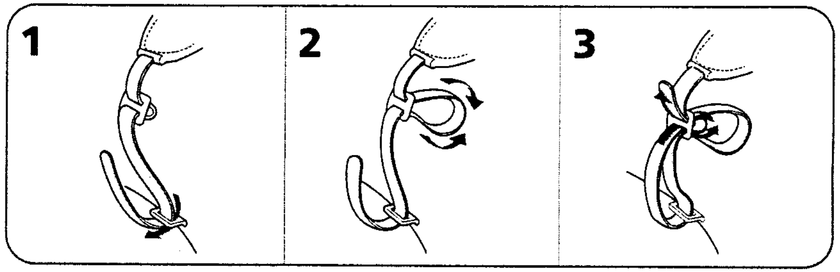
47 **Toma de salida de audio (AUDIO OUT) (pág. 38, 39)**

48 **Toma para micrófono (MIC)**
Conéctele un micrófono externo (no suministrado). Esta toma acepta también un micrófono de "alimentación a través de la clavija".

49 **Cubierta de tomas**

Fijación de la bandolera

Fije la bandolera suministrada a los ganchos para la misma (39 de la página 64).



Identifying the parts

Identificación de las partes

Remote commander

Using the Remote Commander

Make sure that the COMMANDER mode is set to ON (p. 37).

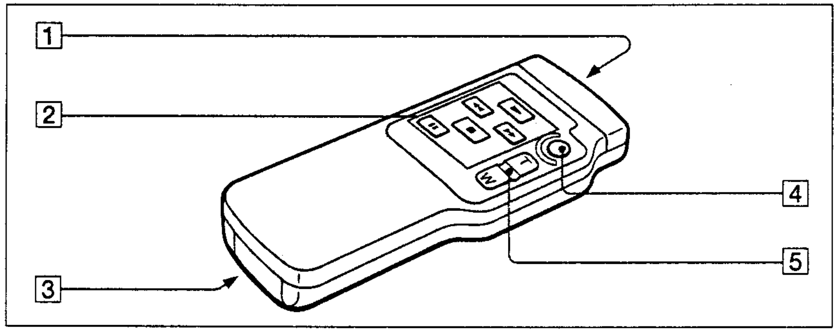
The buttons that have the same name on the Remote Commander as on the camcorder function identically.

Telemando

Utilización del telemando

Cerciórese de activar (ON) el modo de telemando (COMMANDER) (pág. 37).

Las teclas que poseen el mismo nombre en el telemando y en la videocámara funcionarán decb forma idéntica.



- [1] **Transmitter**
  Point toward the remote sensor to control the camcorder after turning on the camcorder.
- [2] **Tape transport buttons (p.22)**
- [3] **R6 (size AA) battery holder (p.67)**
- [4] **START/STOP button**
- [5] **Power zoom button**
  The zooming speed is unchangeable on the Remote Commander.

- [1] **Transmisor**
  Apunte con él hacia el sensor remoto para controlar la videocámara después de haber conectado la alimentación de la misma.
- [2] **Teclas de transporte de la cinta (pág. 22)**
- [3] **Compartimiento de las pilas R6 (tamaño AA) (pág. 67)**
- [4] **Tecla de inicio/parada (START/STOP)**
- [5] **Tecla del zoom motorizado**
  La velocidad del zoom no podrá cambiarse en el telemando.

To prepare the remote commander

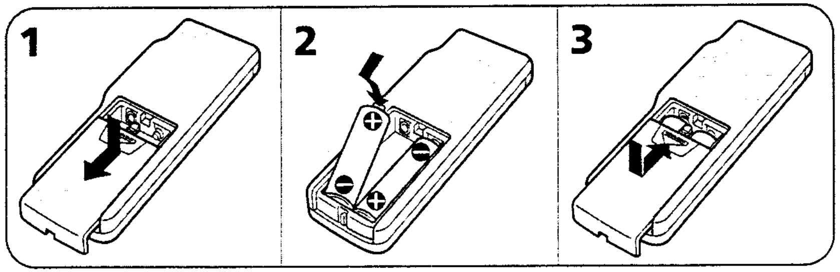
To use the Remote Commander, you must insert two R6 (size AA) batteries. Use the supplied R6 (size AA) batteries.

(1) Remove the battery cover from the Remote Commander.
(2) Insert both of the R6 (size AA) batteries with correct polarity.
(3) Put the battery cover back onto the Remote Commander.

Preparación del telemando

Para utilizar el telemando, deberá colocar dos pilas R6 (tamaño AA). Utilice las pilas R6 (tamaño AA) suministradas.

(1) Quite la tapa del compartimiento de las pilas en el telemando.
(2) Inserte las dos pilas R6 (tamaño AA) con la polaridad correcta.
(3) Cierre la tapa.



Note on battery life
The batteries for the Remote Commander last about 6 months under normal operation. When the batteries become weak or dead, the Remote Commander does not work.

To avoid damage from possible battery leakage
Remove the batteries when you will not use the Remote Commander for a long time.

Nota sobre la duración de las pilas
Las pilas en el telemando durarán unos 6 meses en condiciones normales de funcionamiento. Cuando las pilas se debiliten o agoten, el telemando no funcionará.

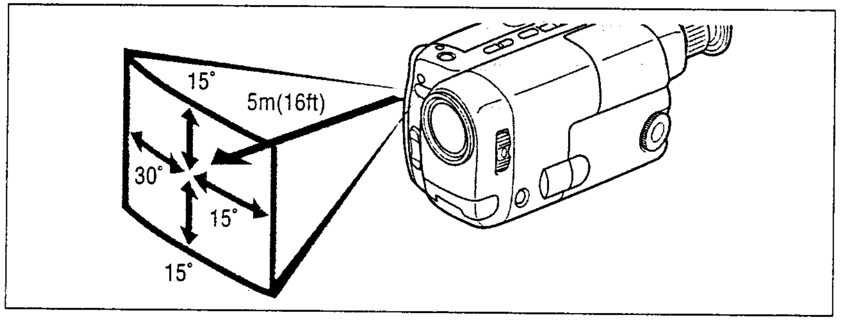
Para evitar el daño que podría causar el derrame del electrólito de las pilas
Cuando no vaya a utilizar el telemando durante mucho tiempo, extraiga las pilas.

Remote control direction

Aim the Remote Commander to the remote sensor within the range as shown below.

Área controlable mediante el telemando

Apunte con el telemando hacia el sensor de control remoto dentro de la gama que se muestra en la ilustración.



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor on the camcorder and the Remote Commander.
- This camcorder works at commander mode VTR 2. The commander modes (1, 2, and 3) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode VTR 2, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.

Notas sobre el telemando

- Mantenga el sensor de control remoto alejado de luces intensas, como la directa del sol u otras de iluminación. De lo contrario, el telemando no funcionará adecuadamente.
- Asegúrese de que no haya ningún obstáculo entre el telemando y el sensor remoto.
- Esta videocámara funciona con señales del modo de mando VTR 2. El modo de mando (1, 2 y 3) se utiliza para distinguir esta videocámara de otras videograbadoras Sony para evitar una operación errónea de control remoto. Si utiliza otra videograbadora Sony en el modo de mando VTR 2, se recomienda cambiarlo o cubrir el sensor de control remoto de la videograbadora con un papel negro.

To watch the demonstration

You can watch a brief demonstration of pictures with special effects.
If the demonstration appears when you turn on the camcorder for the first time, exit the Demo mode to use your camcorder.

To enter demo mode

(1) Eject the cassette and set the POWER switch to OFF.
(2) Turn STANDBY up.
(3) While holding down ▶ set the POWER switch to CAMERA. Demonstration starts.
The demonstration stops when you insert the cassette.

Note that once you enter Demo mode, this mode is retained as long as the lithium battery is in place. Therefore, demonstration starts automatically 10 minutes later every time you set the POWER switch to CAMERA, or after you eject the cassette.

To exit demo mode

(1) Set the POWER switch to OFF.
(2) Turn STANDBY up.
(3) While holding down ■ set the POWER switch to CAMERA.

Para ver la demostración

Usted podrá ver una corta demostración de imágenes con efectos especiales.
Si aparece la demostración al conectar la alimentación de la videocámara por primera vez, salga del modo de demostración para utilizar la videocámara.

Para entrar en el modo de demostración

(1) Expulse el videocassette y deslice el selector POWER hasta OFF.
(2) Gire STANDBY hacia arriba.
(3) Manteniendo presionada ▶ hacia abajo, deslice el selector POWER hasta CAMERA.
La demostración comenzará. La demostración cesará cuando inserte un videocassette.

Tenga en cuenta que una vez que haya entrado en el modo de demostración, este modo se mantendrá mientras la pila de litio esté en su lugar. Por lo tanto, la demostración comenzará automáticamente después de 10 minutos cada vez que deslice el selector POWER hasta CAMERA, o después de haber expulsado el videocassette.

Para salir del modo de demostración

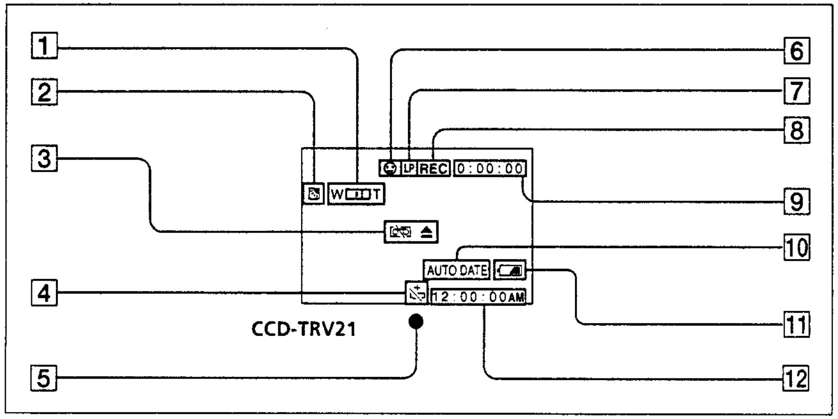
(1) Deslice el selector POWER hasta OFF.
(2) Gire STANDBY hacia arriba.
(3) Manteniendo presionada ■ hacia abajo, deslice el selector POWER hasta CAMERA.

Identifying the parts

Identificación de las partes

In the viewfinder and on the LCD screen

En el visor y en la pantalla de cristal líquido



1 Power zoom indicator (p.16) (CCD-TRV21 only)

2 Back light indicator (p. 30)

3 Warning indicator (p. 71)

4 Lithium battery indicator (p. 41)

5 Recording lamp/battery lamp (p. 11) (in the viewfinder)

6 Mirror mode indicator (p. 27)

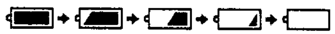
7 Recording in LP mode (p. 11)

8 Tape transport mode (p. 11)

9 Tape counter (p. 14)

10 AUTO DATE indicator (p. 11)

11 Remaining battery indicator (p. 45)



12 Date, Time or Title (p. 29, 34)

1 Indicador del zoom motorizado (pág. 16) (CCD-TRV21 solamente)

2 Indicador de videofilmación a contraluz (pág. 30)

3 Indicador de advertencia (pág. 71)

4 Indicador del estado de la pila de litio (pág. 41)

5 Lámpara indicadora de videofilmación/ estado de la batería (pág. 11)

6 Indicador de modo de espejo (pág. 27)

7 Grabación en el modo LP (pág. 11)

8 Modo de transporte de la cinta (pág. 11)

9 Contador de la cinta (pág. 14)

10 Indicador del fechador automático (AUTO DATE) (pág. 11)

11 Indicador de batería restante (pág. 45)

12 Fecha, hora, o título (pág. 29, 34)

Warning indicators

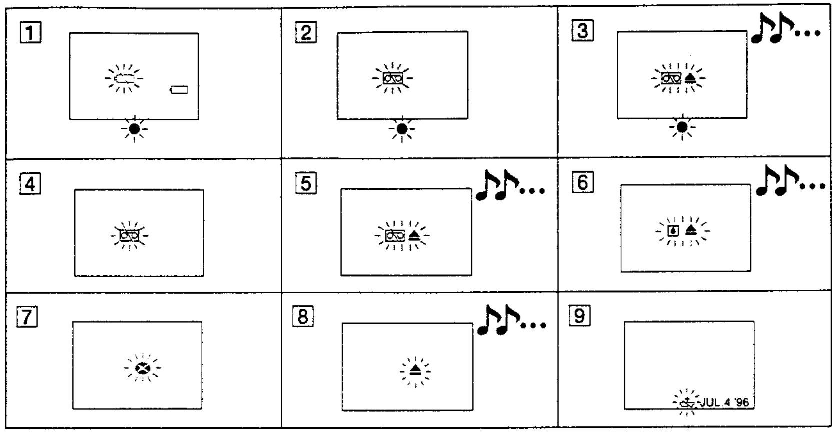
Indicadores de advertencia

If indicators flash in the viewfinder or on the LCD screen, or a caution lamp on the camcorder flashes, check the following:

♪: You can hear the beep sound when BEEP is set to ON (p. 37).

Si parpadean indicadores en el visor o en la pantalla de cristal líquido, o una lámpara de precaución en la videocámara, verifique los puntos siguientes:

♪: Si ajusta BEEP a ON, podrá oir el pitido (pág. 37).



1 The battery is weak or dead
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 The tape is near the end.

3 The tape has run out.

4 No tape has been inserted.

5 The tab on the tape is out (red) (p.10).

6 Moisture condensation has occurred (p.48).
≜ indicator appears only when the cassette is inserted.

7 The video heads may be contaminated (p.49).

8 Some other trouble has occurred.
Disconnect the power source and contact your Sony dealer or local authorized facility.

9 The lithium battery is weak or is not installed (p. 41).
This indicator flashes just only after powering on.

1 La batería está débil o agotada
Parpadeo lento: La batería está débi
Parpadeo rápido: La batería está ag

2 La cinta está a punto de finalizar.

3 La cinta ha finalizado.

4 No hay videocassette insertado.

5 La lengüeta del videocassette está al descubierto (roja) (pág. 10).

6 Se ha producido condensación de humedad (pág. 48).
El indicador ≜ aparecerá solamente cuando esté insertado un videocassette.

7 Las cabezas de vídeo pueden estar contaminadas (pág. 49).

8 Se ha producido algún otro problema.
Desconecte la fuente de alimentación y póngase en contacto con su proveedor Sony o una estación de servicio autorizada local.

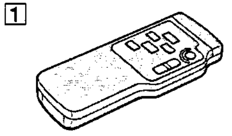
9 La pila de litio está débil, o no está colocada (pág. 41).
Este indicador parpadeará solamente después de conectarse la alimentación.

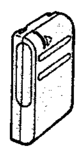
Checking supplied accessories

Comprobación de los accesorios suministrados

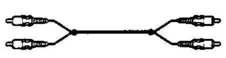
Check that the following accessories are supplied with your camcorder.

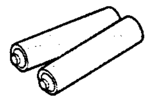
Compruebe si los siguientes accesorios están incluidos con su videocámara.

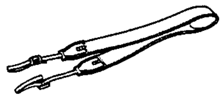
1


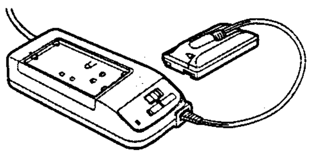
2


3

4


5


6


7


1 **Wireless Remote Commander (1) (p.23, 66)**

2 **NP-55 Battery Pack (1) (p.7)**

3 **CR2025 Lithium Battery (1) (p.41)**
Already installed in the camcorder.

4 **A/V connecting cable (1) (p.38)**

5 **R6 (size AA) battery for Remote Commander (2) (p.67)**

6 **Shoulder strap (1) (p.65)**

7 **AC-V15/V16/V16A AC power adaptor (1) (p.7, 26)**

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

1 **Telemando inalámbrico (1) (Pág. 23, 66)**

2 **Batería NP-55 (1) (Pág. 7)**

3 **Pila de litio CR2025 (1) (Pág. 41)**
ya está instalada en la videocára.

4 **Cable conector de audio/vídeo (1) (Pág. 38)**

5 **Pilas R6 (tamaño AA) para el telemando (2) (Pág. 67)**

6 **Bandolera (1) (Pág. 65)**

7 **Adaptador de alimentación de CA AC-V15/V16/V16A (1) (Pág. 7, 26)**

El contenido de la grabación no puede ser compensado si la grabación o la reproducción no ha sido posible debido al mal funcionamiento de la videocámara, videocassette, etc.

Getting started

Charging and installing the battery pack

Preparativos

Carga y fijación de la batería

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.

Charging the battery pack

Charge the battery pack on a flat place without vibration.

(1) Connect the AC power adaptor to the wall outlet.

(2) Align the right side of the battery pack with the line on the AC power adaptor, then slide the battery pack in the direction of the arrow.

(3) Set the selector to CHARGE. The CHARGE lamp (orange) lights up. Charging begins.

When charging is completed, the CHARGE lamp goes out. Unplug the unit from the wall outlet, and then remove the battery pack and install it on the camcorder.

Antes de utilizar la videocámara, primero tendrá que cargar y colocar la batería. Para cargar la batería, utilice el adaptador de alimentación de CA suministrado.

Carga de la batería

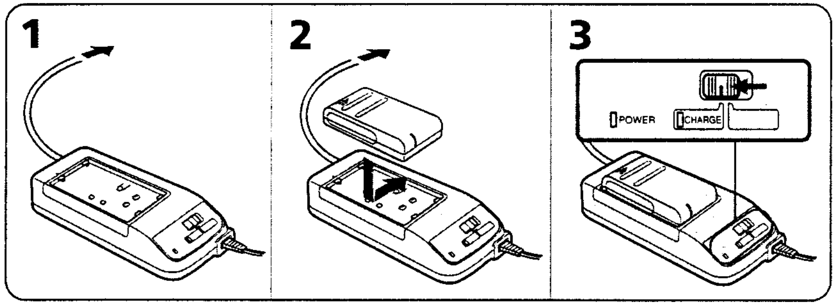
Cargue la batería en un lugar nivelado y exento de vibraciones.

(1) Conecte el adaptador de alimentación de CA a una toma de la red.

(2) Alinee el lado derecho de la batería con la línea del adaptador de alimentación de CA, y después deslice la batería en el sentido de la flecha.

(3) Ponga el selector en CHARGE. La lámpara CHARGE (anaranjada) se encenderá y se iniciará la carga.

Cuando finalice la carga, la lámpara CHARGE se apagará. Desconecte la unidad de la toma de la red, y después quite la batería y fíjela a la videocámara.



Charging Time

Battery pack	Charging time*
NP-55 (supplied)	70
NP-55H	85
NP-C65/67	105
NP-66	95
NP-77H/77HD	170
NP-98/98D	215

* Approximate minutes to charge an empty battery pack using the supplied AC power adaptor (Lower temperatures require a longer charging time.)

Tiempo de carga

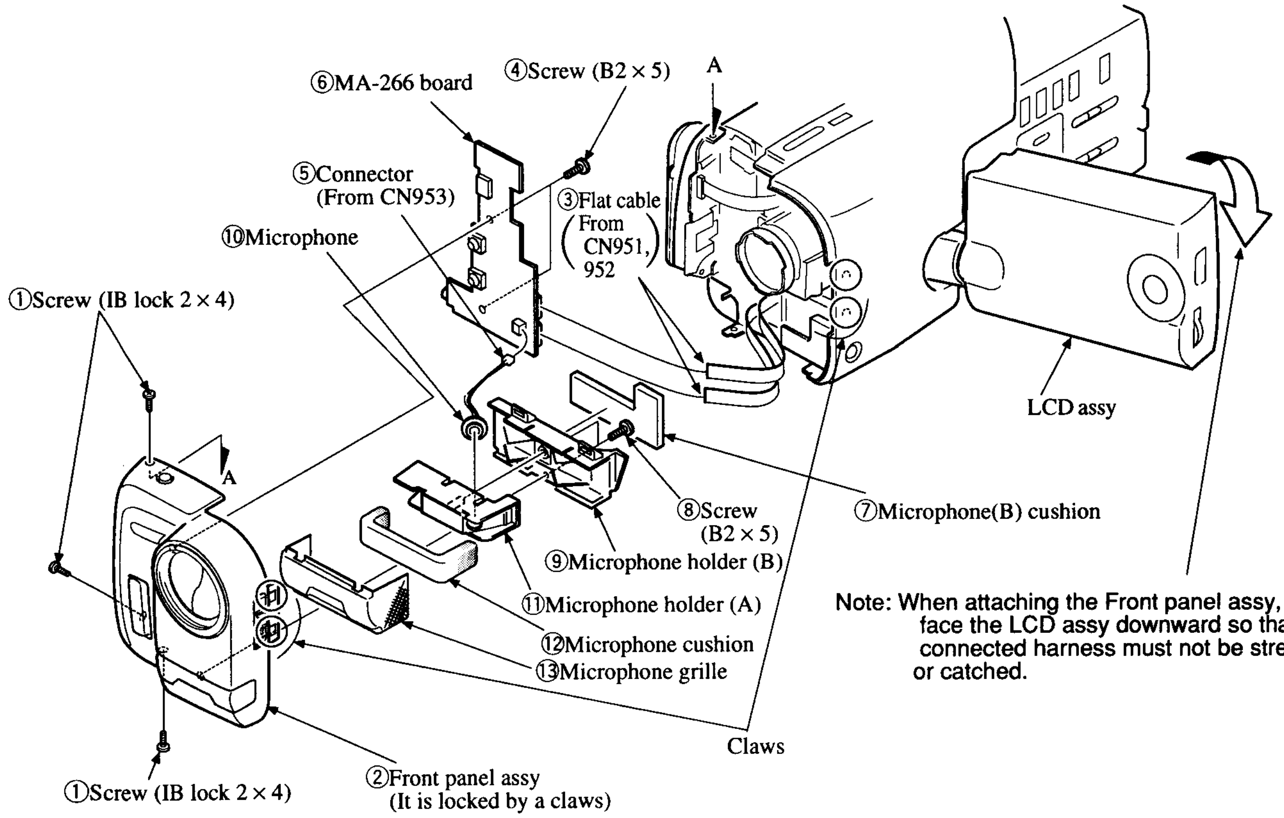
Batería	Tiempo de carga*
NP-55 (suministrada)	70
NP-55H	85
NP-C65/67	105
NP-66	95
NP-77H/77HD	170
NP-98/98D	215

* Minutos aproximados para cargar una batería agotada utilizando el adaptador de alimentación de CA suministrado. (A bajas temperaturas, el tiempo de carga será más largo.)

SECTION 2
DISASSEMBLY

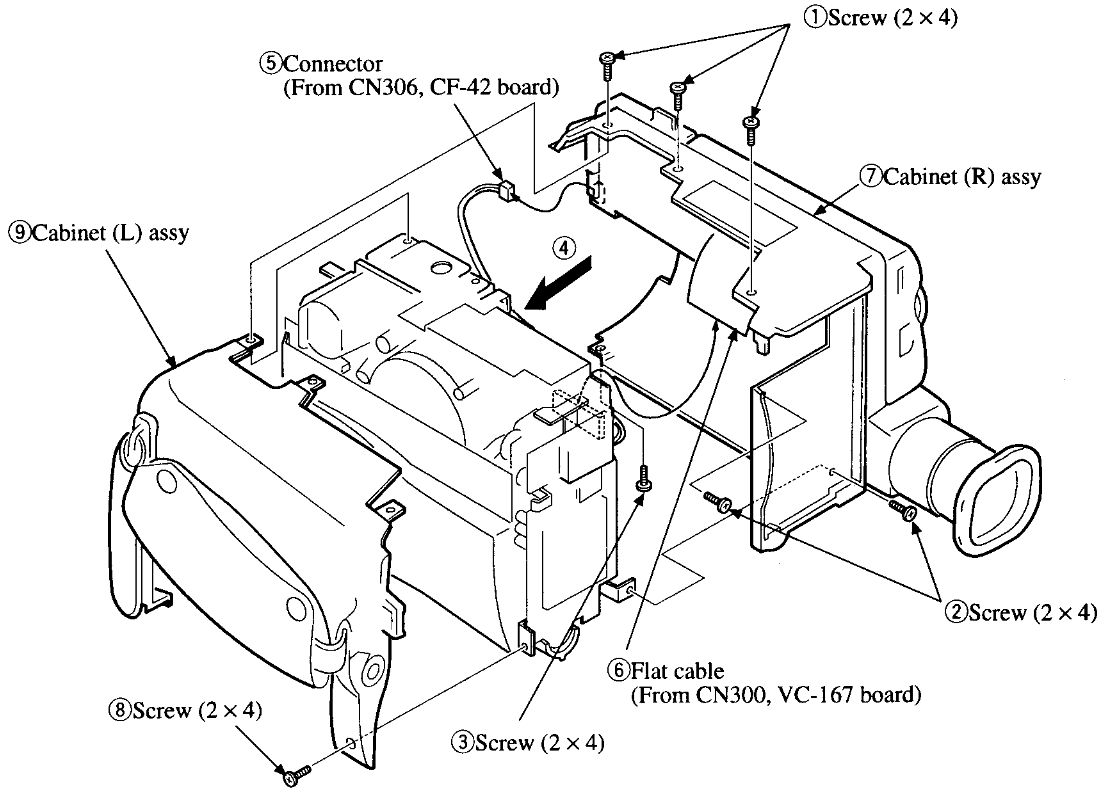
NOTE : Follow the disassembly procedure in the numerical order given.

2-1. REMOVAL OF MA-266 BOARD and MICROPHONE

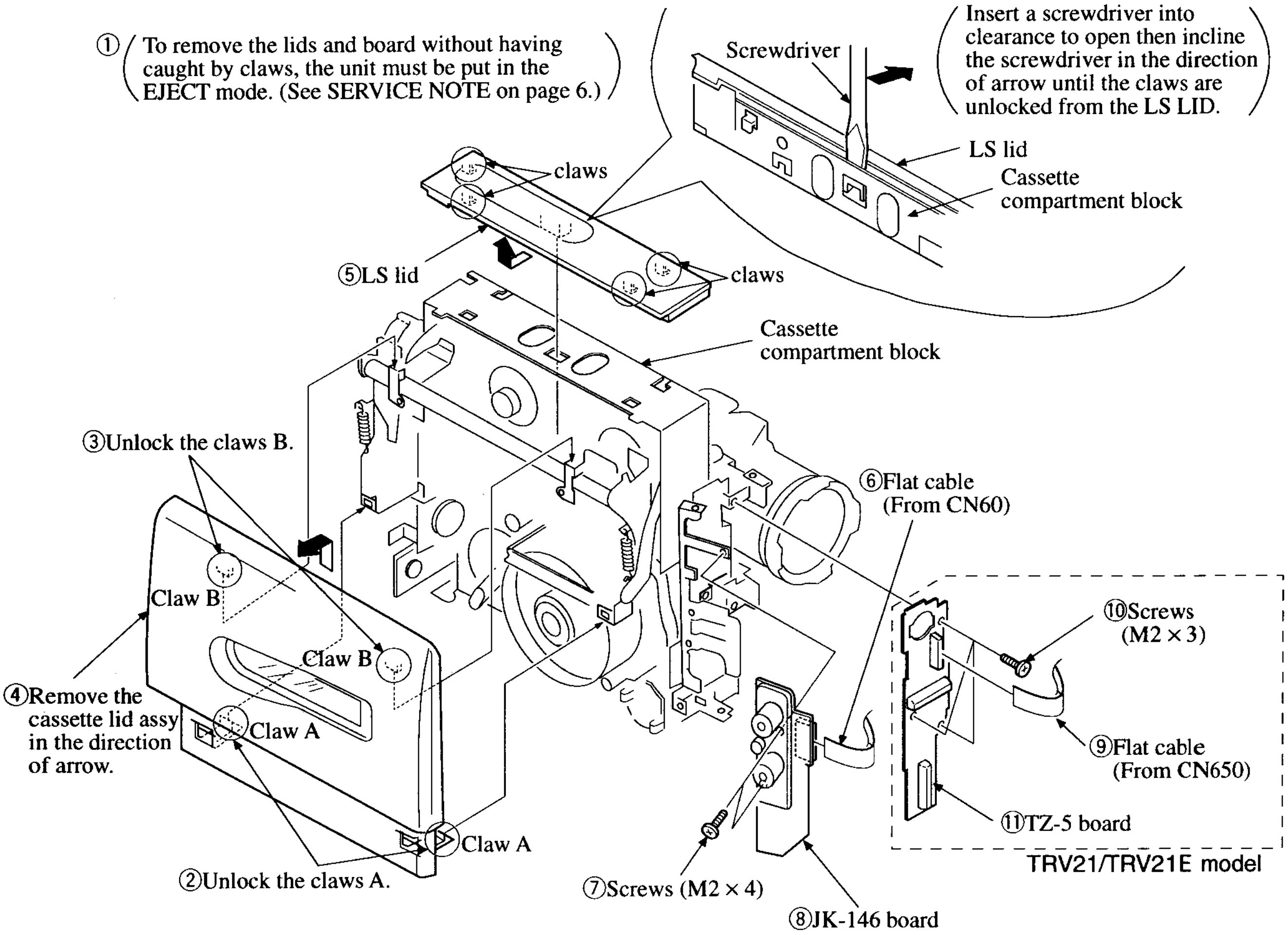

⑥MA-266 board
④Screw (B2 × 5)
A
⑤Connector
(From CN953)
③Flat cable
(From CN951, 952)
⑩Microphone
①Screw (IB lock 2 × 4)
A
LCD assy
⑧Screw
(B2 × 5)
⑦Microphone(B) cushion
⑨Microphone holder (B)
⑪Microphone holder (A)
⑫Microphone cushion
⑬Microphone grille
Claws
①Screw (IB lock 2 × 4)
②Front panel assy
(It is locked by a claws)

Note: When attaching the Front panel assy, face the LCD assy downward so that the connected harness must not be stretchec or catched.

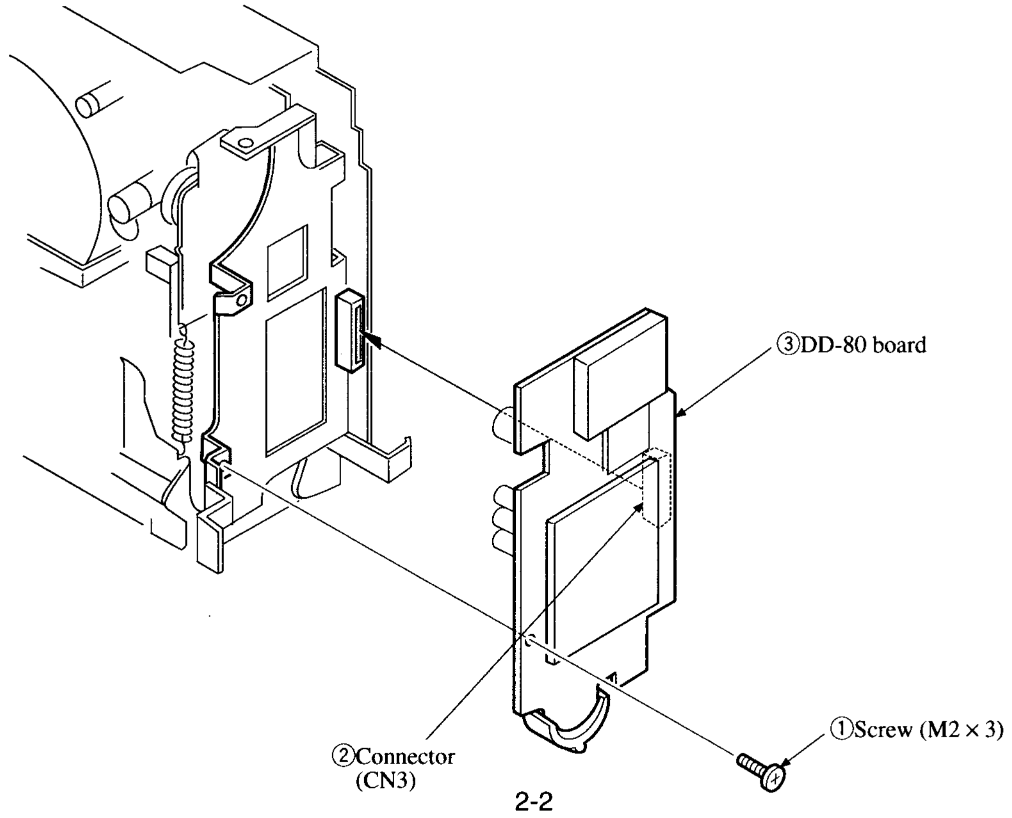
2-2. REMOVAL OF CABINET ASSY


①Screw (2 × 4)
⑤Connector
(From CN306, CF-42 board)
⑦Cabinet (R) assy
⑨Cabinet (L) assy
④
②Screw (2 × 4)
⑥Flat cable
(From CN300, VC-167 board)
⑧Screw (2 × 4)
③Screw (2 × 4)

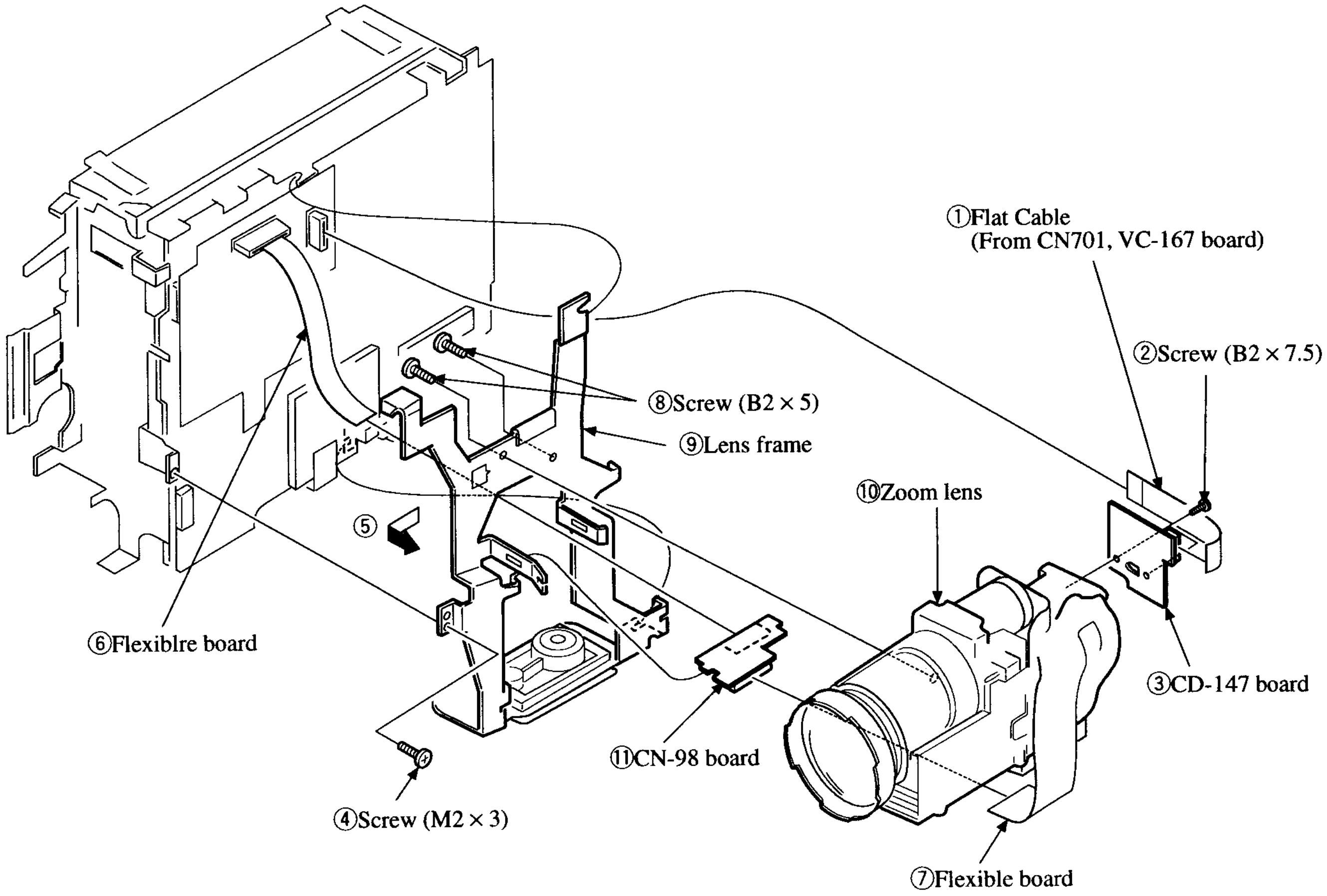
2-3. REMOVAL OF CASSETTE LID ASSY, LS LID, JK-146 and TZ-5 BOARD


① To remove the lids and board without having caught by claws, the unit must be put in the EJECT mode. (See SERVICE NOTE on page 6.)
Screwdriver
Insert a screwdriver into clearance to open then incline the screwdriver in the direction of arrow until the claws are unlocked from the LS LID.
LS lid
Cassette compartment block
claws
⑤LS lid
claws
Cassette compartment block
③Unlock the claws B.
⑥Flat cable (From CN60)
Claw B
⑩Screws (M2 × 3)
Claw B
④Remove the cassette lid assy in the direction of arrow.
Claw A
⑨Flat cable (From CN650)
⑪TZ-5 board
Claw A
TRV21/TRV21E model
②Unlock the claws A.
⑦Screws (M2 × 4)
⑧JK-146 board

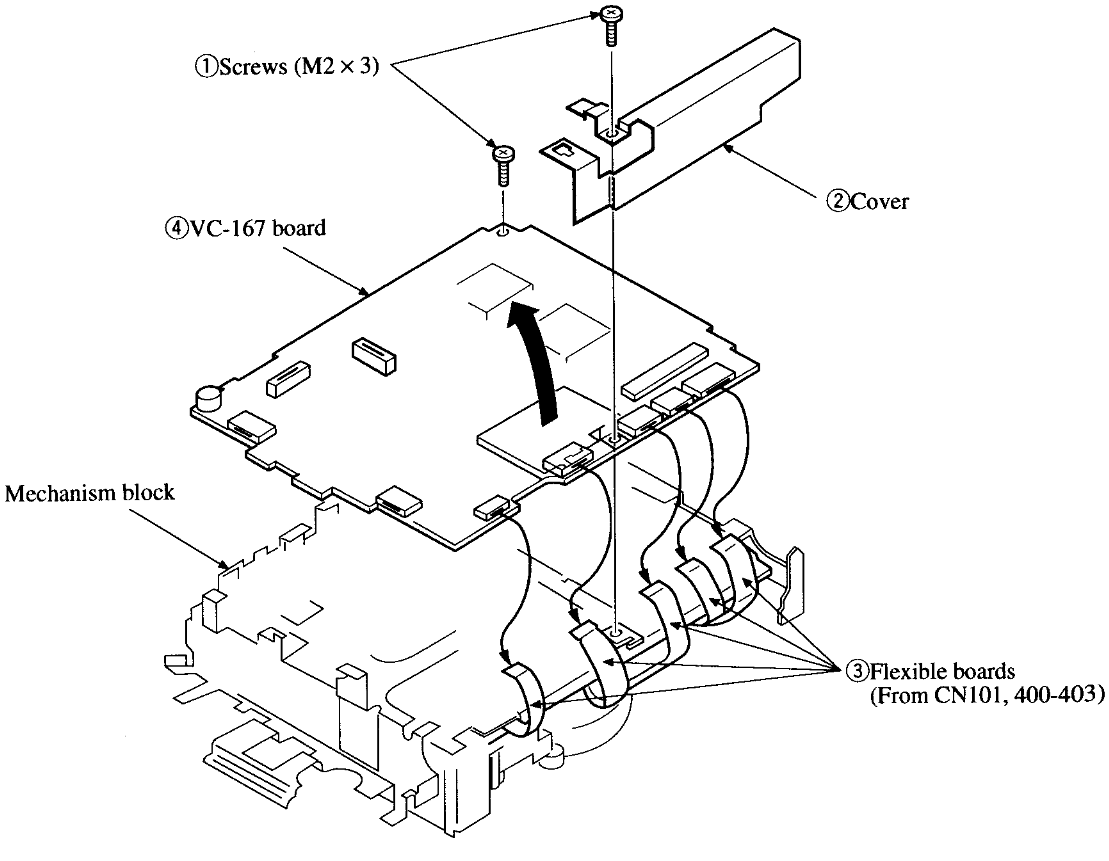
2-4. REMOVAL OF DD-80 BOARD


③DD-80 board
①Screw (M2 × 3)
②Connector (CN3)

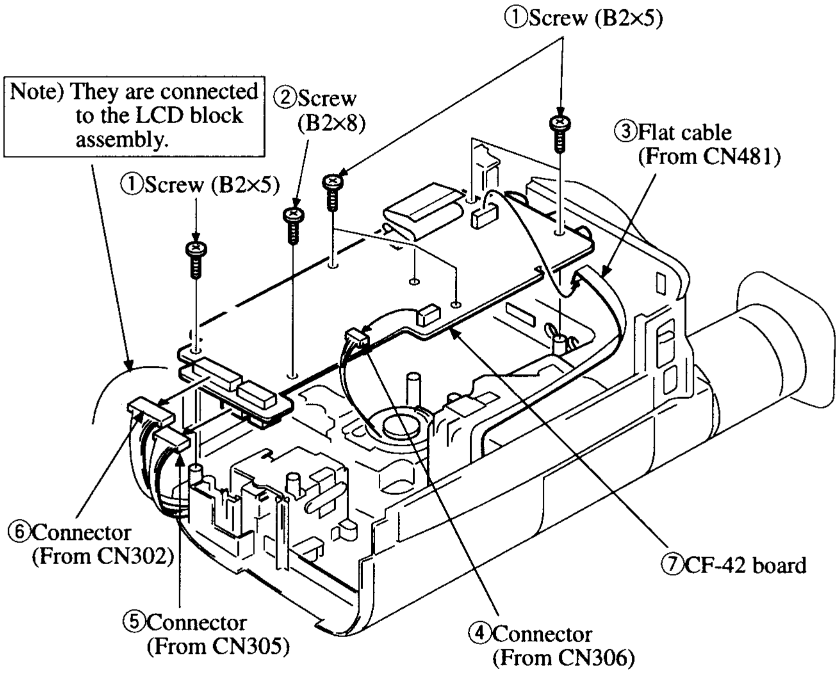
2-5. REMOVAL OF ZOOM LENS, CD-147 BOARD and CN-98 BOARD


①Flat Cable
(From CN701, VC-167 board)
②Screw (B2 × 7.5)
⑧Screw (B2 × 5)
⑨Lens frame
⑩Zoom lens
⑤
⑥Flexiblre board
③CD-147 board
⑪CN-98 board
④Screw (M2 × 3)
⑦Flexible board

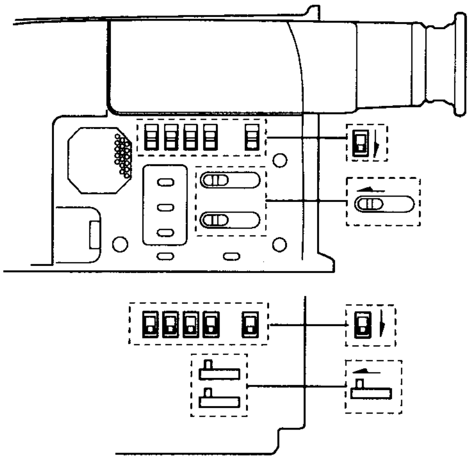
2-6. REMOVAL OF VC-167 BOARD


①Screws (M2 × 3)
②Cover
④VC-167 board
Mechanism block
③Flexible boards
(From CN101, 400-403)

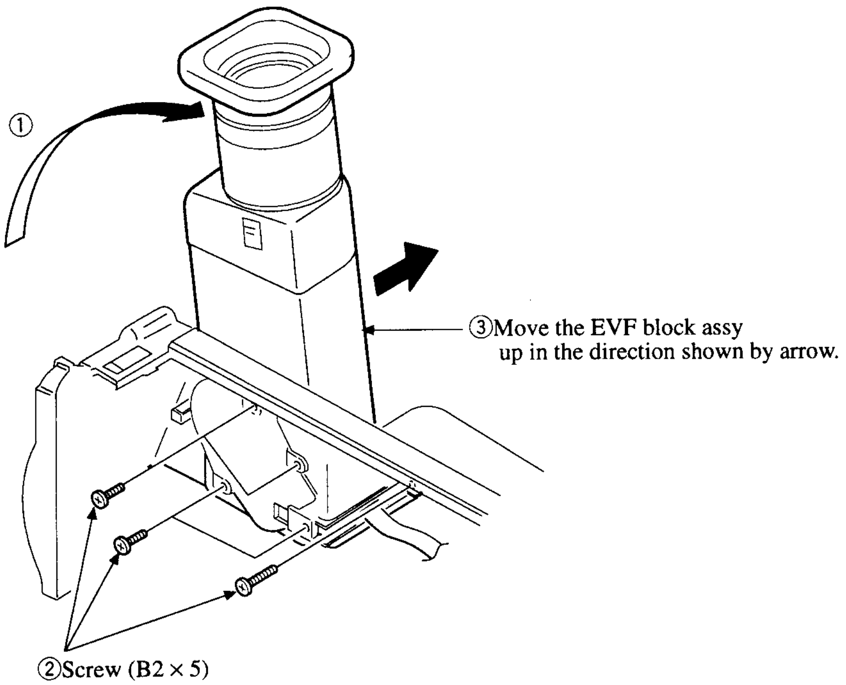
2-7. REMOVAL OF CF-42 BOARD


①Screw (B2×5)
Note) They are connected to the LCD block assembly.
②Screw (B2×8)
③Flat cable (From CN481)
①Screw (B2×5)
⑥Connector (From CN302)
⑦CF-42 board
⑤Connector (From CN305)
④Connector (From CN306)

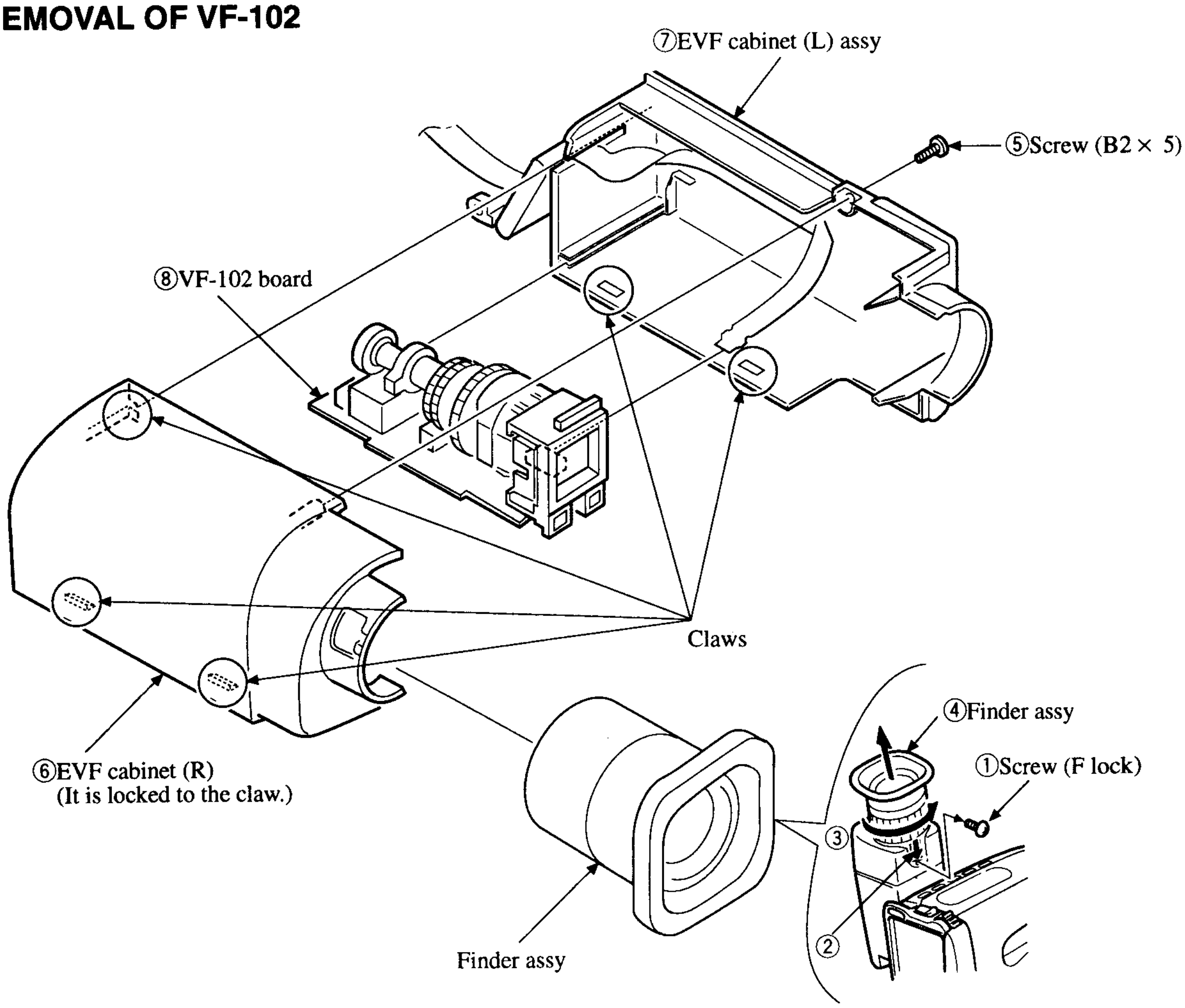
Note) When attaching the CF-42 board,
Set the switches in the positions
as showen.



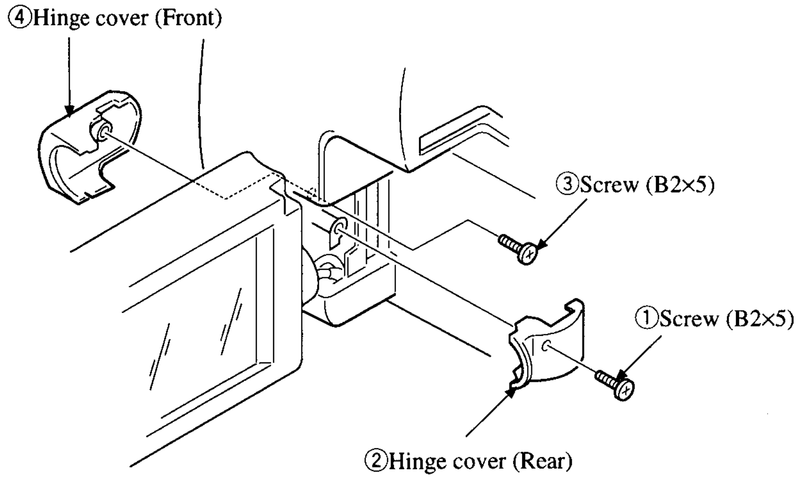
2-8. REMOVAL OF EVF BLOCK ASSY

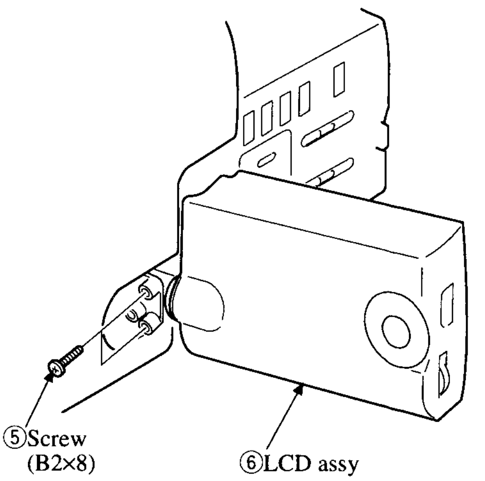

①
③Move the EVF block assy
up in the direction shown by arrow.
②Screw (B2 × 5)

2-9. REMOVAL OF VF-102

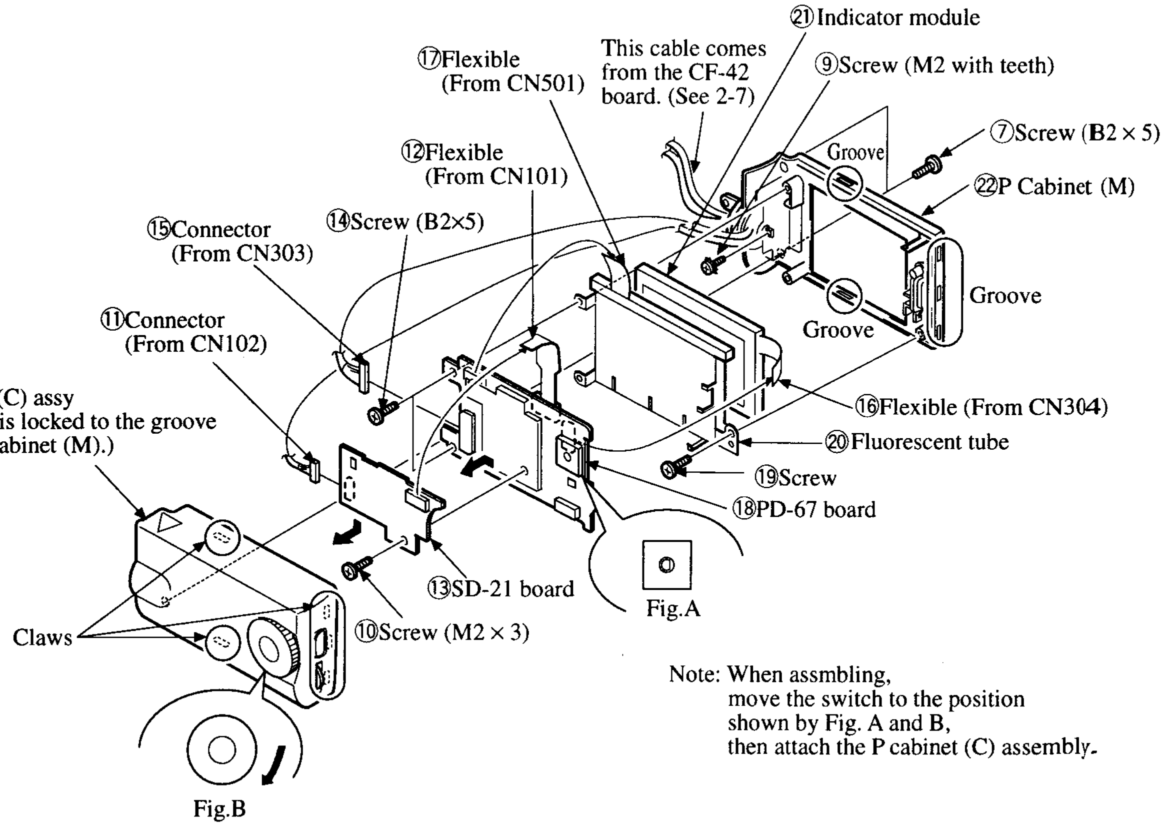

⑦EVF cabinet (L) assy
⑤Screw (B2 × 5)
⑧VF-102 board
Claws
④Finder assy
①Screw (F lock)
⑥EVF cabinet (R)
(It is locked to the claw.)
③
②
Finder assy

2-10.REMOVAL OF P CABINET, SD-21 BOARD and PD-67 BOARD


④Hinge cover (Front)
③Screw (B2×5)
①Screw (B2×5)
②Hinge cover (Rear)


⑤Screw
(B2×8)
⑥LCD assy

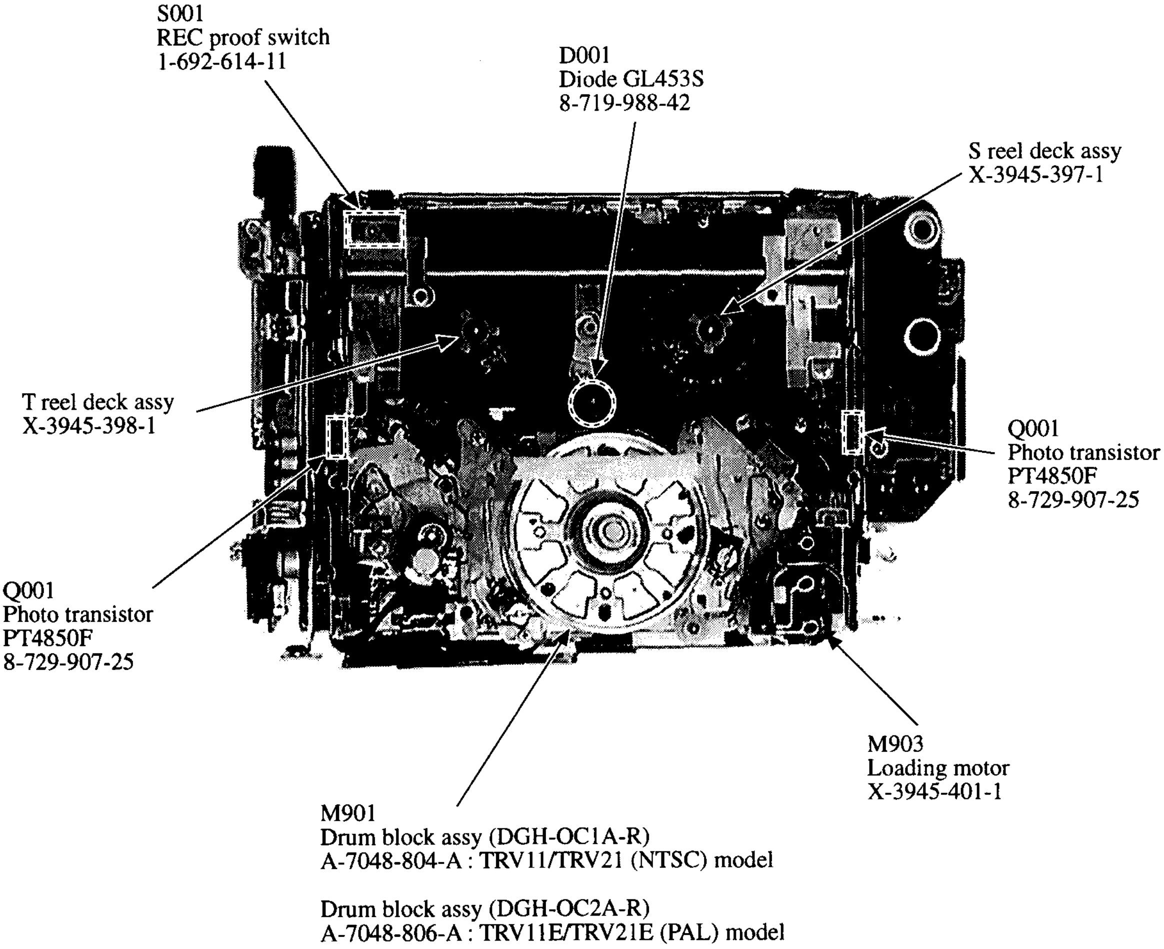
Note : The screw ⑨ (M2 with teeth) must be tightened strongly when it is attached to fix the shaft of Hinge assy.


㉑Indicator module
⑰Flexible
(From CN501)
This cable comes from the CF-42 board. (See 2-7)
⑨Screw (M2 with teeth)
⑦Screw (B2 × 5)
Groove
㉒P Cabinet (M)
⑫Flexible
(From CN101)
⑭Screw (B2×5)
⑮Connector
(From CN303)
Groove
Groove
⑪Connector
(From CN102)
⑯Flexible (From CN304)
⑧P Cabinet (C) assy
(The claw is locked to the groove of the P Cabinet (M).)
⑳Fluorescent tube
⑲Screw
⑱PD-67 board
⑬SD-21 board
Fig.A
Claws
⑩Screw (M2 × 3)
Fig.B

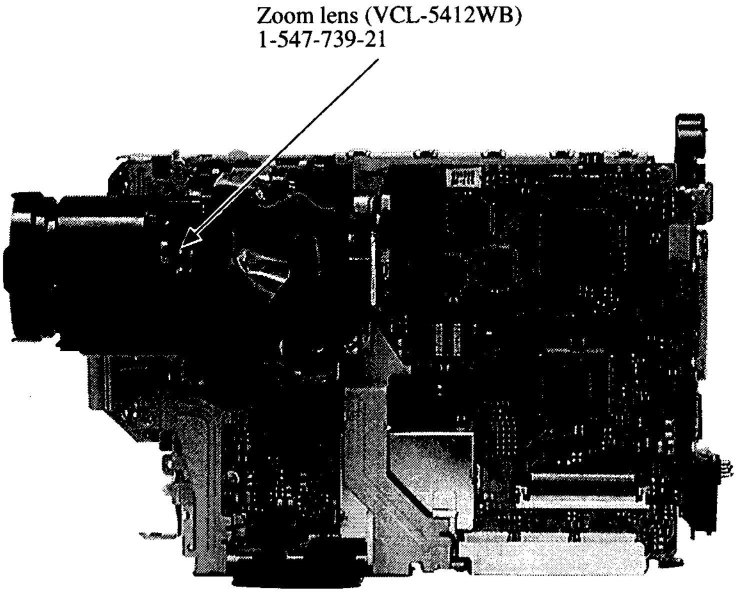
Note: When assmbling,
move the switch to the position
shown by Fig. A and B,
then attach the P cabinet (C) assembly.

2-11. INTERNAL VIEWS

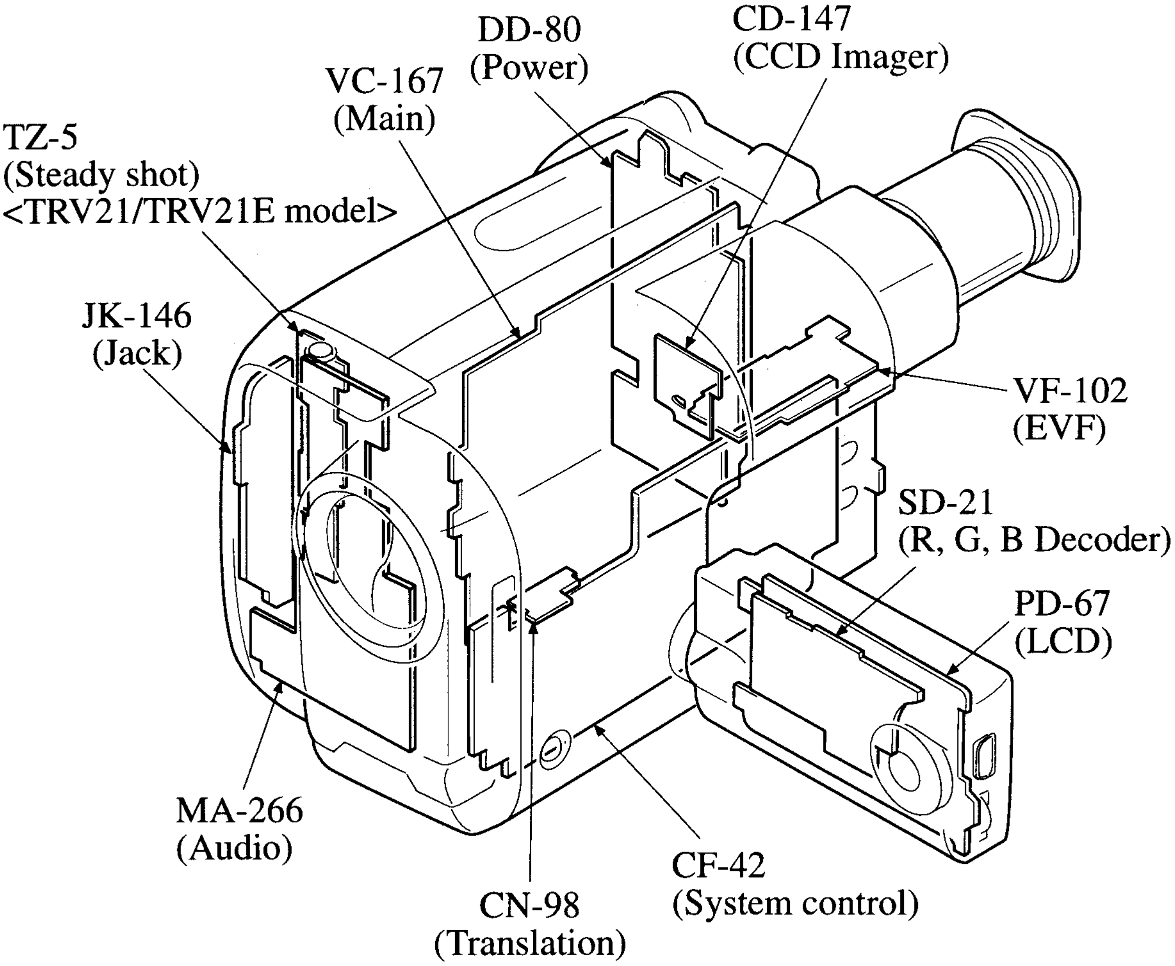
—LEFT SIDE—


S001
REC proof switch
1-692-614-11
D001
Diode GL453S
8-719-988-42
S reel deck assy
X-3945-397-1
T reel deck assy
X-3945-398-1
Q001
Photo transistor
PT4850F
8-729-907-25
Q001
Photo transistor
PT4850F
8-729-907-25
M903
Loading motor
X-3945-401-1
M901
Drum block assy (DGH-OC1A-R)
A-7048-804-A : TRV11/TRV21 (NTSC) model
Drum block assy (DGH-OC2A-R)
A-7048-806-A : TRV11E/TRV21E (PAL) model

—RIGHT SIDE—

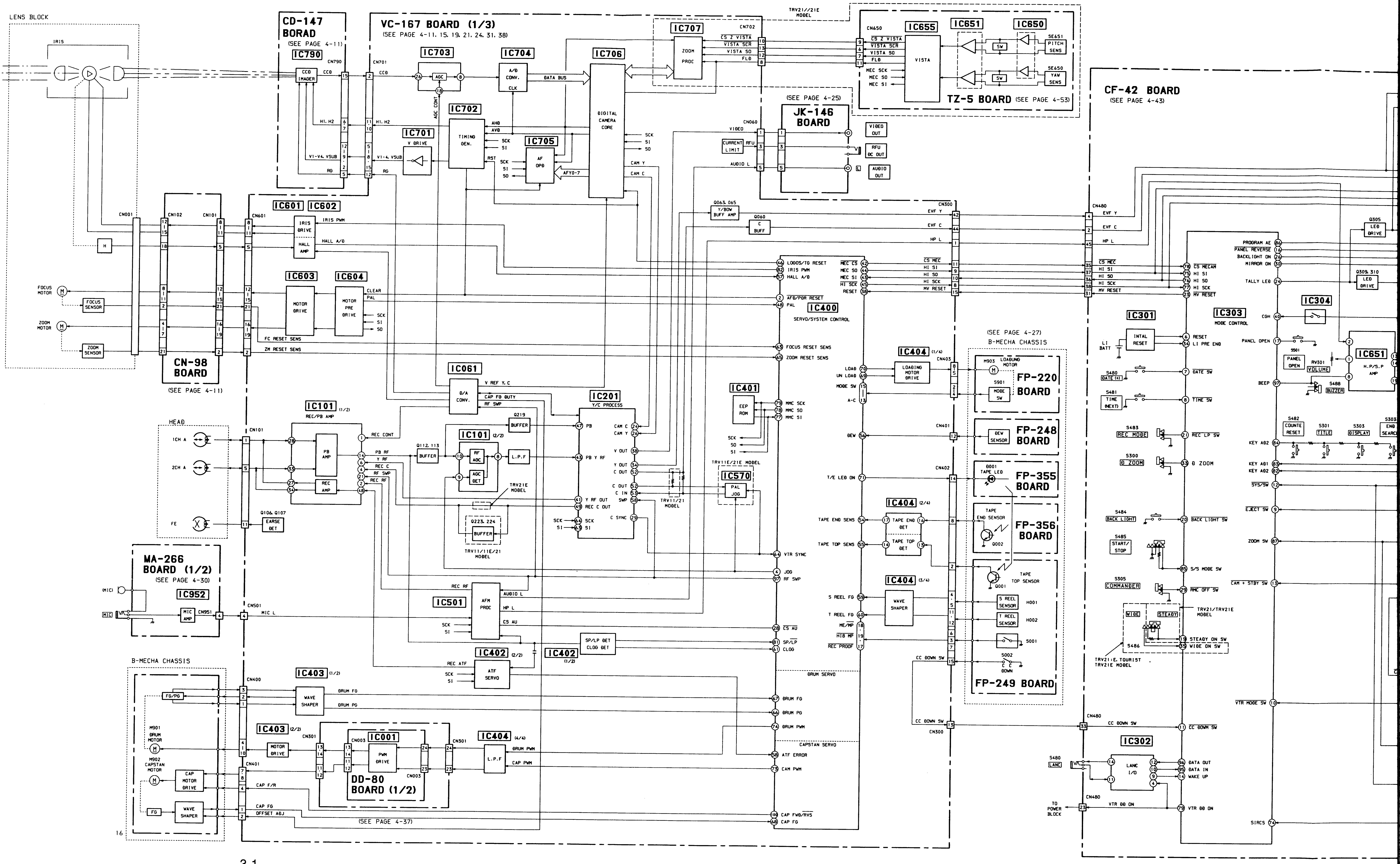

Zoom lens (VCL-5412WB)
1-547-739-21

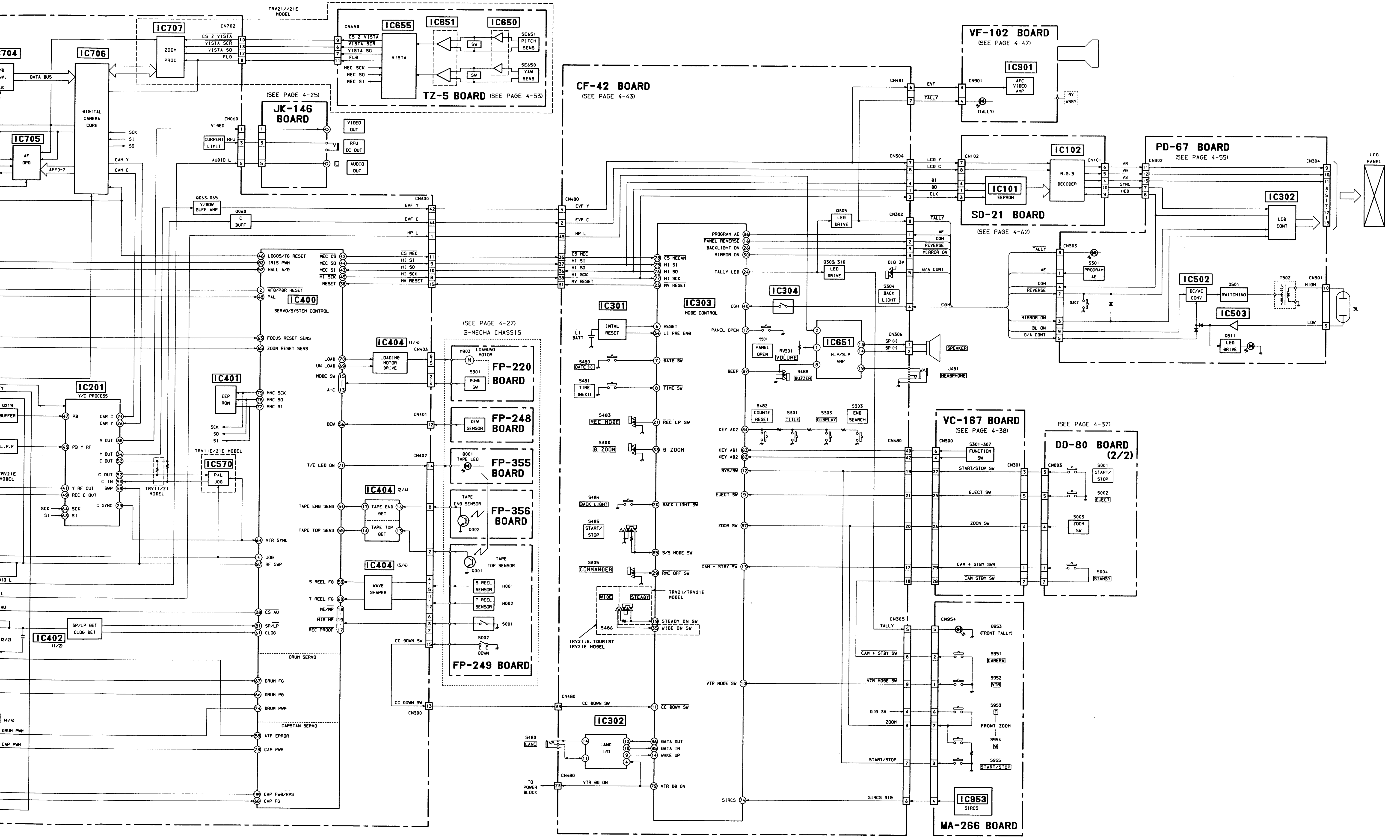
2-12.CIRCUIT BOARDS LOCATION


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(Steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

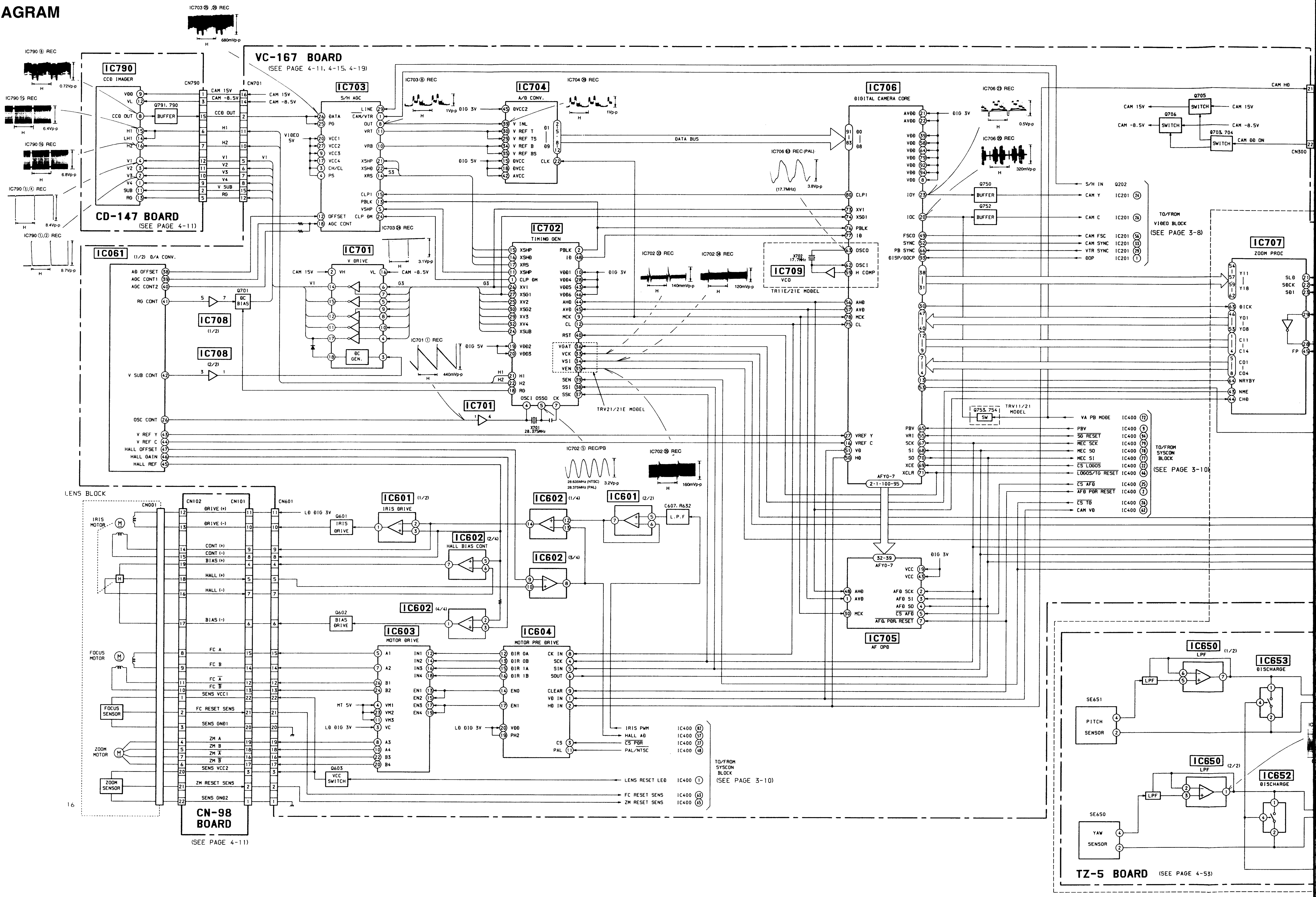
SECTION 3
BLOCK DIAGRAMS

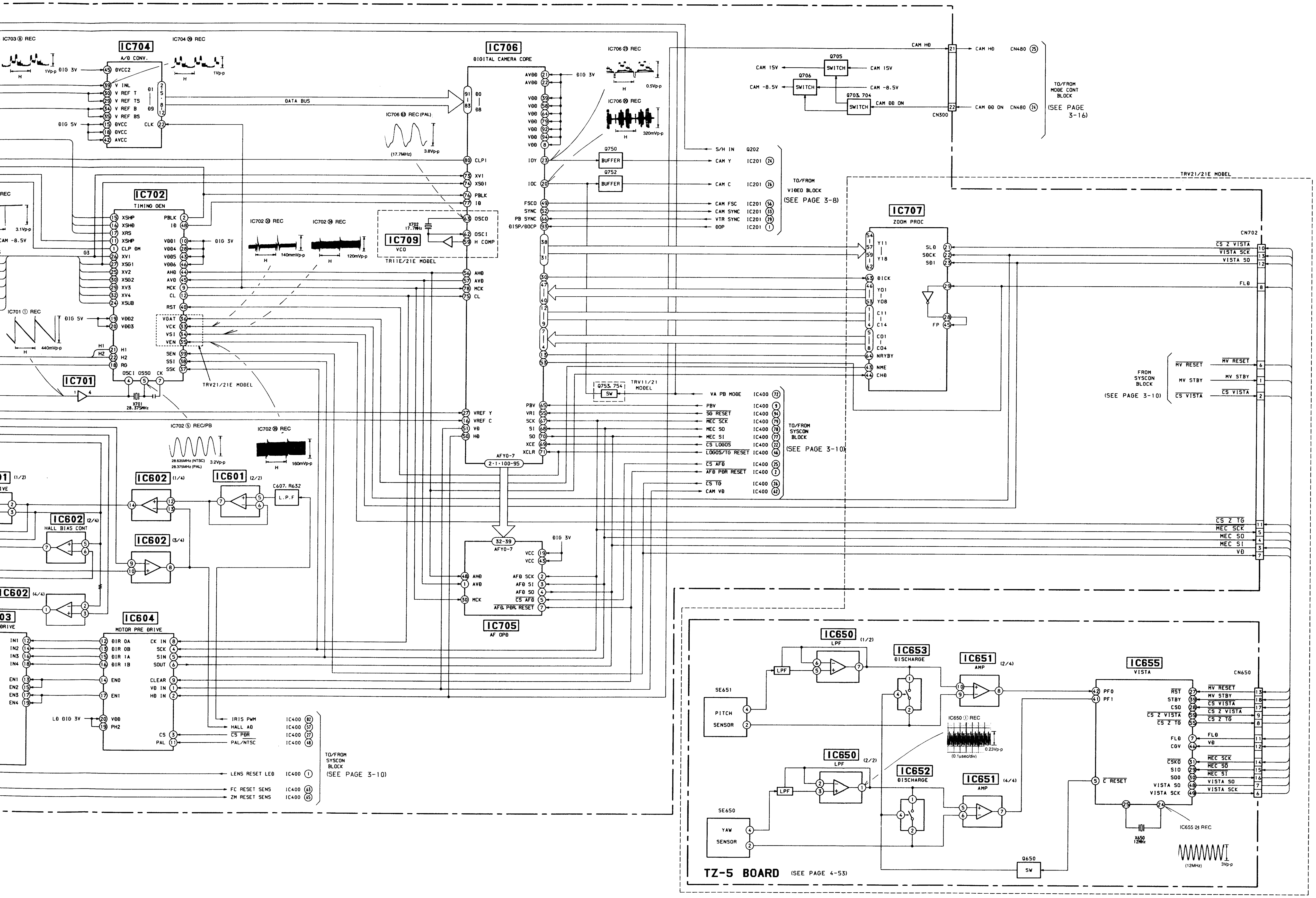
3-1. OVERALL BLOCK DIAGRAM


LENS BLOCK
IRIS
CD-147 BORAD
(SEE PAGE 4-11)
IC790
CCD IMAGER
VC-167 BOARD (1/3)
(SEE PAGE 4-11, 15, 19, 21, 24, 31, 38)
IC703
AGC
IC704
A/D CONV.
IC706
DIGITAL CAMERA CORE
IC707
ZOOM PROC
IC702
TIMING GEN.
IC701
V DRIVE
IC705
AF OPD
TRV21//21E MODEL
IC655
VISTA
IC651
IC650
SE651 PITCH SENS
SE650 YAW SENS
TZ-5 BOARD (SEE PAGE 4-53)
JK-146 BOARD
(SEE PAGE 4-25)
VIDEO OUT
RFU DC OUT
AUDIO OUT
CF-42 BOARD
(SEE PAGE 4-43)
IC601
IC602
IRIS DRIVE
HALL AMP
IC603
IC604
MOTOR DRIVE
MOTOR PRE DRIVE
FOCUS MOTOR
FOCUS SENSOR
ZOOM MOTOR
ZOOM SENSOR
CN-98 BOARD
(SEE PAGE 4-11)
IC400
SERVO/SYSTEM CONTROL
IC061
D/A CONV.
IC201
Y/C PROCESS
IC101 (1/2)
REC/PB AMP
PB AMP
REC AMP
IC101 (2/2)
RF AGC
AGC DET
L.P.F
BUFFER
HEAD
1CH A
2CH A
FE
EARSE DET
TRV21E MODEL
Q223, 224 BUFFER
TRV11/11E/21 MODEL
IC401
EEP ROM
IC570
PAL JOG
TRV11E/21E MODEL
IC404 (1/4)
LOADING MOTOR DRIVE
IC404 (2/4)
TAPE END DET
TAPE TOP DET
IC404 (3/4)
WAVE SHAPER
(SEE PAGE 4-27)
B-MECHA CHASSIS
FP-220 BOARD
FP-248 BOARD
FP-355 BOARD
FP-356 BOARD
FP-249 BOARD
MA-266 BOARD (1/2)
(SEE PAGE 4-30)
IC952
MIC AMP
IC501
AFM PROC
IC402 (2/2)
ATF SERVO
IC402 (1/2)
SP/LP DET CLOG DET
B-MECHA CHASSIS
IC403 (1/2)
WAVE SHAPER
IC403 (2/2)
MOTOR DRIVE
IC001
PWM DRIVE
DD-80 BOARD (1/2)
IC404 (4/4)
L.P.F
M901 DRUM MOTOR
M902 CAPSTAN MOTOR
CAP MOTOR DRIVE
WAVE SHAPER
(SEE PAGE 4-37)
DRUM SERVO
CAPSTAN SERVO
IC301
INTAL RESET
IC303
MODE CONTROL
IC304
IC651
H.P/S.P AMP
IC302
LANC I/O
TO POWER BLOCK
TRV21/TRV21E MODEL
TRV21:E, TOURIST TRV21E MODEL

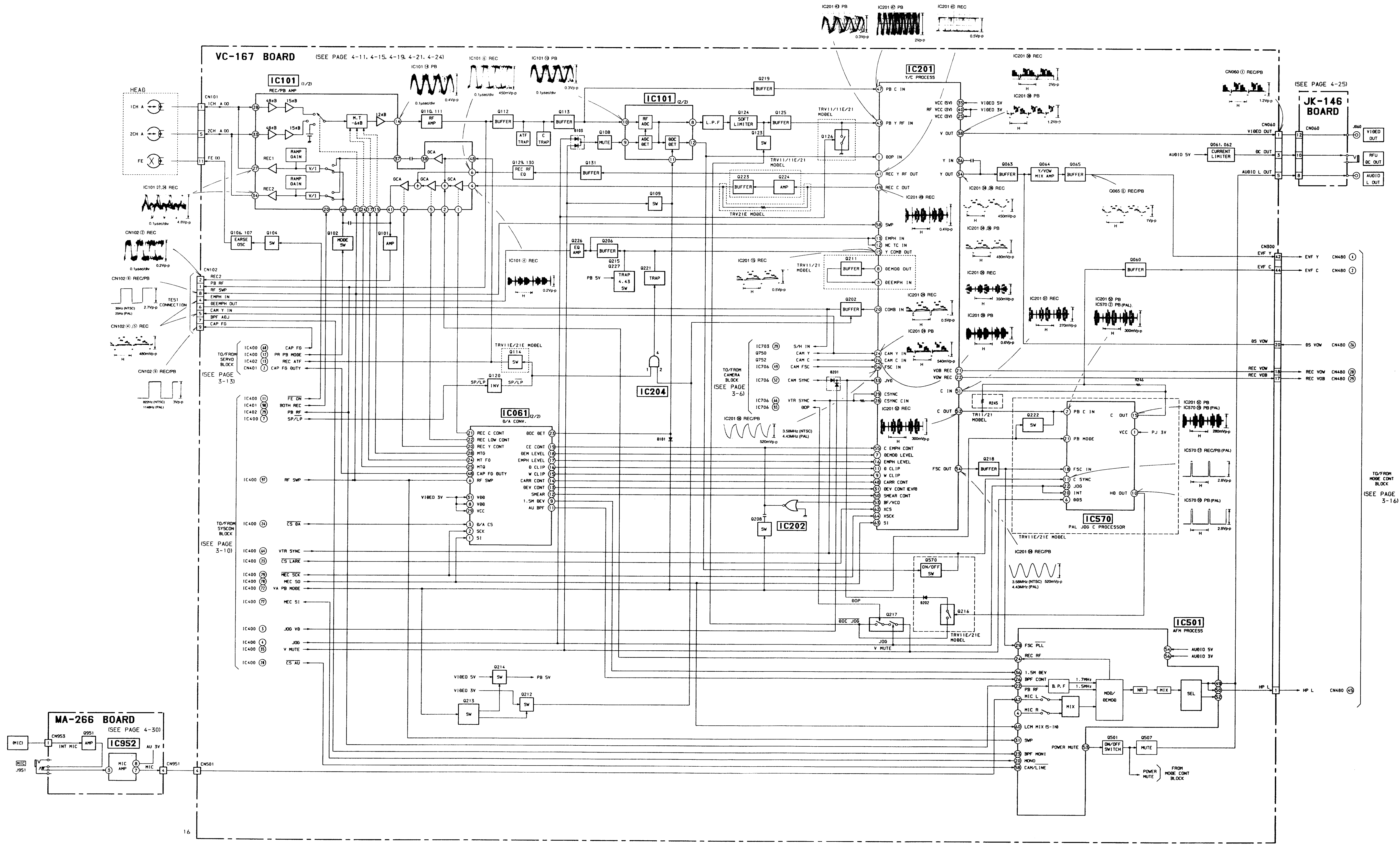

TRV21/21E MODEL
IC707
ZOOM PROC
IC706
DIGITAL CAMERA CORE
IC705
AF OPO
IC655
VISTA
IC651
IC650
SE651 PITCH SENS
SE650 YAW SENS
TZ-5 BOARD (SEE PAGE 4-53)
JK-146 BOARD
(SEE PAGE 4-25)
VIDEO OUT
RFU DC OUT
AUDIO OUT
CURRENT LIMIT
IC400
SERVO/SYSTEM CONTROL
IC404
LOADING MOTOR DRIVE
WAVE SHAPER
IC401
EEP ROM
IC201
Y/C PROCESS
IC570
PAL JOG
IC402
SP/LP DET CLOG DET
DRUM SERVO
CAPSTAN SERVO
(SEE PAGE 4-27)
B-MECHA CHASSIS
FP-220 BOARD
FP-248 BOARD
FP-355 BOARD
FP-356 BOARD
FP-249 BOARD
CF-42 BOARD
(SEE PAGE 4-43)
IC301
INTAL RESET
IC303
MODE CONTROL
IC304
IC651
H.P/S.P AMP
IC302
LANC I/O
VF-102 BOARD
(SEE PAGE 4-47)
IC901
AFC VIDEO AMP
DY ASSY
SD-21 BOARD
(SEE PAGE 4-62)
IC102
R.G.B DECODER
IC101
EEPROM
PD-67 BOARD
(SEE PAGE 4-55)
IC302
LCD CONT
LCD PANEL
IC502
DC/AC CONV
IC503
SWITCHING
LED DRIVE
BL
SPEAKER
HEADPHONE
VC-167 BOARD
(SEE PAGE 4-38)
DD-80 BOARD (2/2)
(SEE PAGE 4-37)
S001 START/STOP
S002 EJECT
S003 ZOOM SW
S004 STANDBY
MA-266 BOARD
(SEE PAGE 4-30)
IC953
SIRCS
S951 CAMERA
S952 VTR
S953 T
FRONT ZOOM
S954 W
S955 START/STOP
D953 (FRONT TALLY)
TO POWER BLOCK

3-2. CAMERA BLOCK DIAGRAM

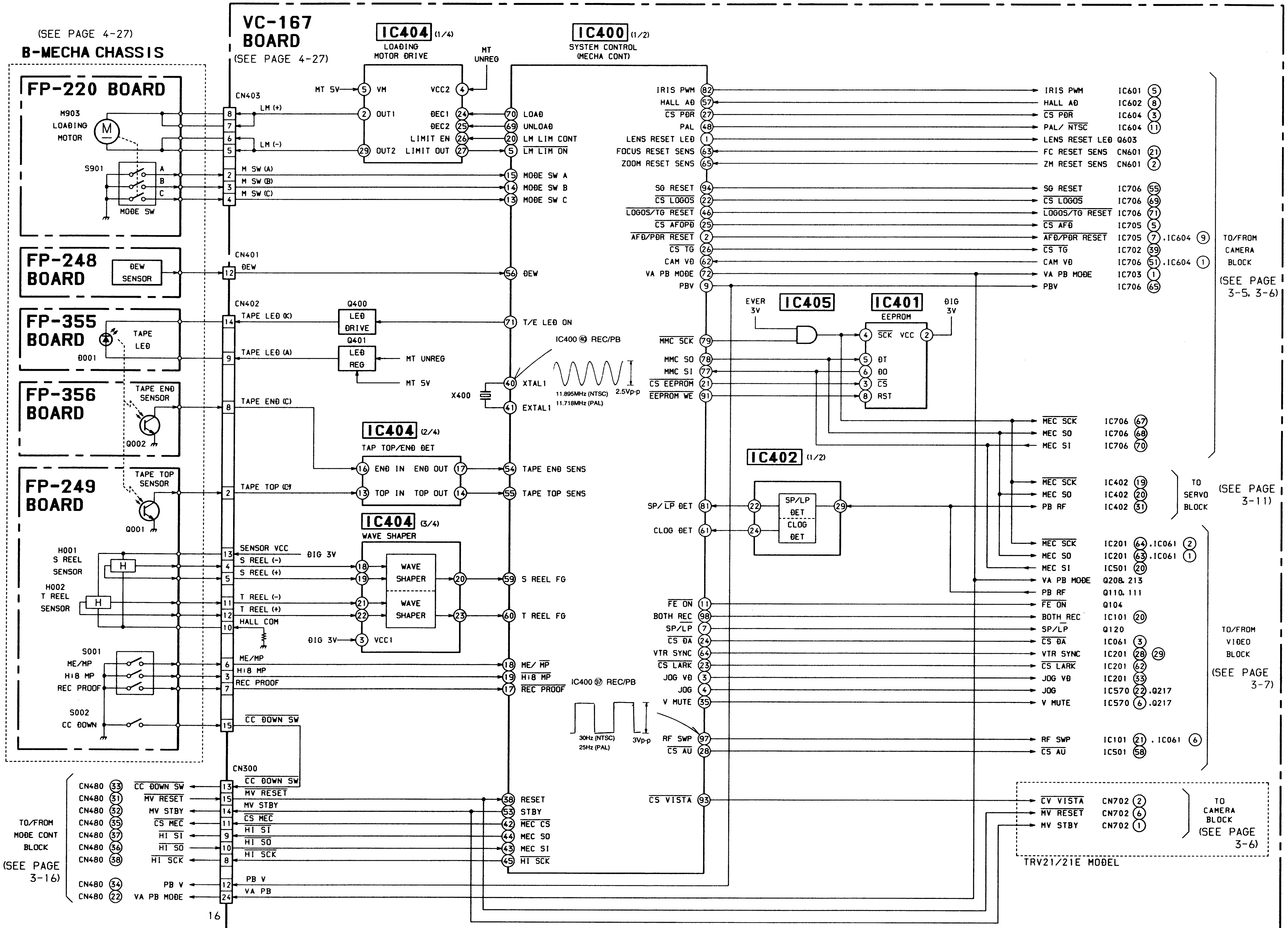

VC-167 BOARD
(SEE PAGE 4-11, 4-15, 4-19)
CD-147 BOARD
(SEE PAGE 4-11)
IC790
CCD IMAGER
Q791, 790
BUFFER
IC703
S/H AGC
IC704
A/D CONV.
IC706
DIGITAL CAMERA CORE
IC702
TIMING GEN
IC701
V DRIVE
IC709
VCO
TR11E/21E MODEL
TRV21/21E MODEL
X701
28.375MHz
X702
17.7MHz
IC061
(1/2) D/A CONV.
IC708
(1/2)
IC708
(2/2)
Q701
DC BIAS
Q750
BUFFER
Q752
BUFFER
Q705
SWITCH
Q706
SWITCH
Q703, 704
SWITCH
CAM 15V
CAM -8.5V
CAM DD ON
CAM HD
CN300
DATA BUS
TO/FROM
VIDEO BLOCK
(SEE PAGE 3-8)
IC707
ZOOM PROC
Q755, 754
SW
TRV11/21 MODEL
TO/FROM
SYSCON
BLOCK
(SEE PAGE 3-10)
AFY0-7
2-1-100-95
IC705
AF OPB
LENS BLOCK
IRIS MOTOR
FOCUS MOTOR
FOCUS SENSOR
ZOOM MOTOR
ZOOM SENSOR
CN-98
BOARD
(SEE PAGE 4-11)
Q601
IRIS DRIVE
IC601
(1/2)
IRIS DRIVE
IC601
(2/2)
IC602
(1/4)
IC602
(2/4)
HALL BIAS CONT
IC602
(3/4)
IC602
(4/4)
C607, R632
L.P.F
Q602
BIAS DRIVE
Q603
VCC SWITCH
IC603
MOTOR DRIVE
IC604
MOTOR PRE DRIVE
TO/FROM
SYSCON
BLOCK
(SEE PAGE 3-10)
TZ-5 BOARD
(SEE PAGE 4-53)
IC650
(1/2)
LPF
IC650
(2/2)
LPF
IC653
DISCHARGE
IC652
DISCHARGE
SE651
PITCH SENSOR
SE650
YAW SENSOR


IC704
A/D CONV.
IC703 ⑥ REC
IC704 ㉚ REC
DIG 3V
DIG 5V
DATA BUS
IC706
DIGITAL CAMERA CORE
IC706 ③ REC (PAL)
IC706 ㉓ REC
IC706 ⑳ REC
IC702
TIMING GEN
IC702 ㉝ REC
IC702 ㉞ REC
IC702 ⑤ REC/PB
IC702 ㉟ REC
IC709
VCO
X702
17.7MHz
TR11E/21E MODEL
IC701 ① REC
IC701
X701
28.375MHz
TRV21/21E MODEL
IC601
IC602
HALL BIAS CONT
IC603
IC604
MOTOR PRE DRIVE
C607, R632
L.P.F
IC705
AF DPD
AFYO-7
Q705
SWITCH
Q706
SWITCH
Q703, 704
SWITCH
CAM HD
CAM 15V
CAM -8.5V
CAM DD ON
CN300
CN480
TO/FROM MODE CONT BLOCK (SEE PAGE 3-16)
Q750
BUFFER
Q752
BUFFER
S/H IN
CAM Y
CAM C
CAM FSC
CAM SYNC
VTR SYNC
BOP
TO/FROM VIDEO BLOCK (SEE PAGE 3-8)
Q753, 754
SW
TRV11/21 MODEL
VA PB MODE
TO/FROM SYSCON BLOCK (SEE PAGE 3-10)
TRV21/21E MODEL
IC707
ZOOM PROC
CN702
CS Z VISTA
VISTA SCK
VISTA SO
FLD
MV RESET
MV STBY
CS VISTA
FROM SYSCON BLOCK (SEE PAGE 3-10)
CS Z TG
MEC SCK
MEC SO
MEC SI
VD
IRIS PWM
HALL AD
CS POR
PAL/NTSC
LENS RESET LED
FC RESET SENS
ZM RESET SENS
TO/FROM SYSCON BLOCK (SEE PAGE 3-10)
IC650
LPF
IC653
DISCHARGE
IC651
AMP
IC652
DISCHARGE
IC655
VISTA
CN650
SE651
PITCH SENSOR
SE650
YAW SENSOR
IC650 ① REC
Q650
SW
X650
12MHz
IC655 ㉔ REC
TZ-5 BOARD (SEE PAGE 4-53)

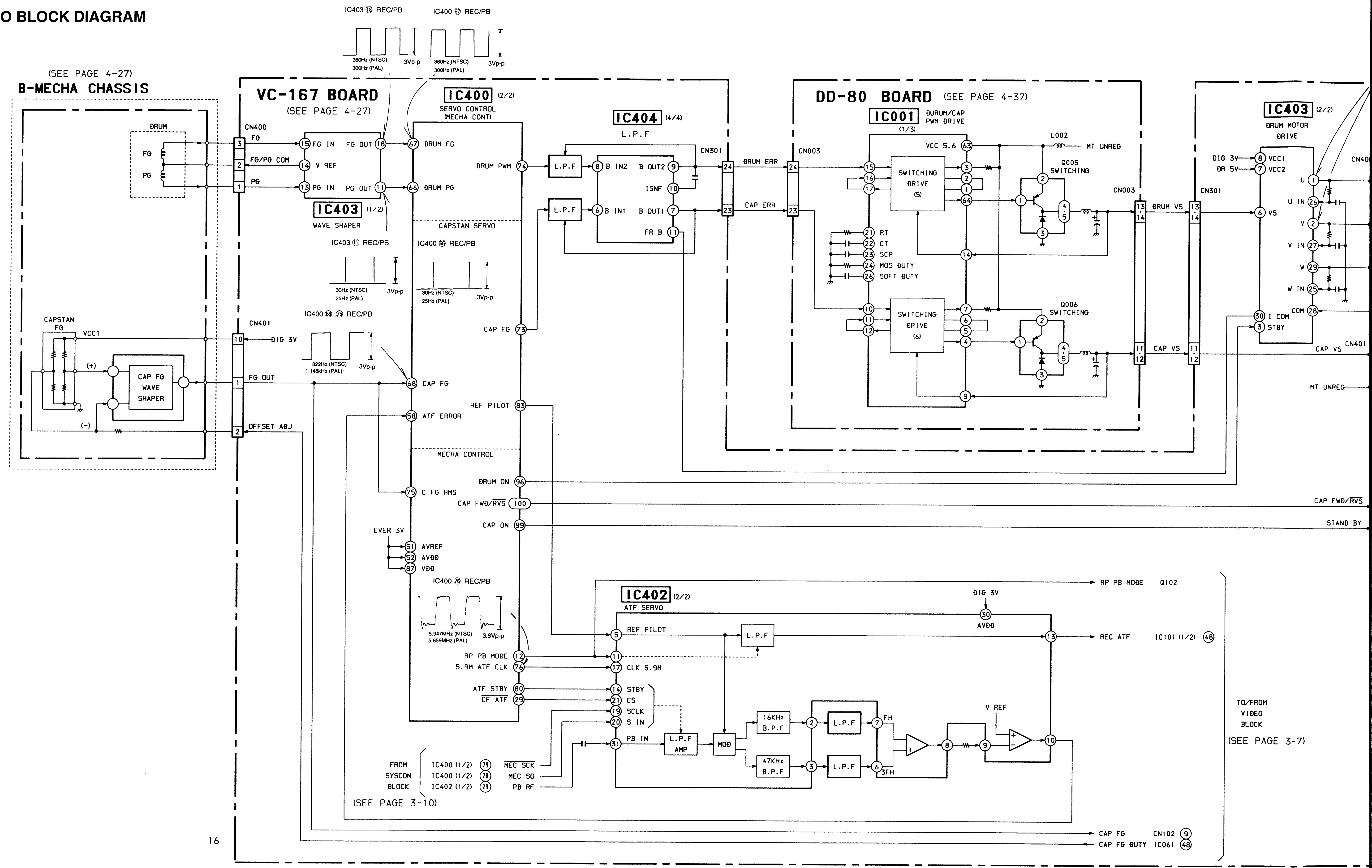
3-3. VIDEO/AUDIO BLOCK DIAGRAM


VC-167 BOARD (SEE PAGE 4-11, 4-15, 4-19, 4-21, 4-24)
IC101 (1/2) REC/PB AMP
HEAD
1CH A
2CH A
FE
CN101
M.T -6dB
RF AMP
RAMP GAIN
V/I
EARSE OSC
MODE SW
IC101 (2/2)
RF AGC
AGC DET
DOC DET
MUTE
ATF TRAP
C TRAP
L.P.F
SOFT LIMITER
BUFFER
TRV11/11E/21 MODEL
TRV21E MODEL
IC201 Y/C PROCESS
PB C IN
PB Y RF IN
DOP IN
REC Y RF OUT
REC C OUT
SWP
EMPH IN
NC TC IN
Y COMB OUT
DEMOD OUT
DEEMPH IN
COMB IN
CAM Y IN
CAM C IN
FSC IN
JVD
CSYNC
CSYNC CIN
VIDEO 5V
VIDEO 3V
V OUT
Y IN
Y OUT
C IN
C OUT
FSC OUT
VOB REC
VOW REC
Y/VOW MIX AMP
CURRENT LIMITER
AUDIO 5V
JK-146 BOARD (SEE PAGE 4-25)
VIDEO OUT
RFU DC OUT
AUDIO L OUT
CN060
CN300
EVF Y
EVF C
CN480
OS VDW
REC VDW
REC VDB
HP L
IC061 (2/2) D/A CONV.
IC204
IC202
IC570 PAL JOG C PROCESSOR
TRV11E/21E MODEL
IC501 AFM PROCESS
FSC PLL
REC RF
1.5M DEV
BPF CONT
PB RF
MIC L
MIC R
LCM MIX (5-1H)
POWER MUTE
ON/OFF SWITCH
MUTE
B.P.F
MOD/DEMOD
NR
MIX
SEL
AUDIO 5V
AUDIO 3V
FROM MODE CONT BLOCK
TO/FROM SERVO BLOCK (SEE PAGE 3-13)
TO/FROM SYSCON BLOCK (SEE PAGE 3-10)
TO/FROM CAMERA BLOCK (SEE PAGE 3-6)
TO/FROM MODE CONT BLOCK (SEE PAGE 3-16)
MA-266 BOARD (SEE PAGE 4-30)
IC952 MIC AMP
MIC
J951
CN953
CN951
CN501
INT MIC
AU 3V

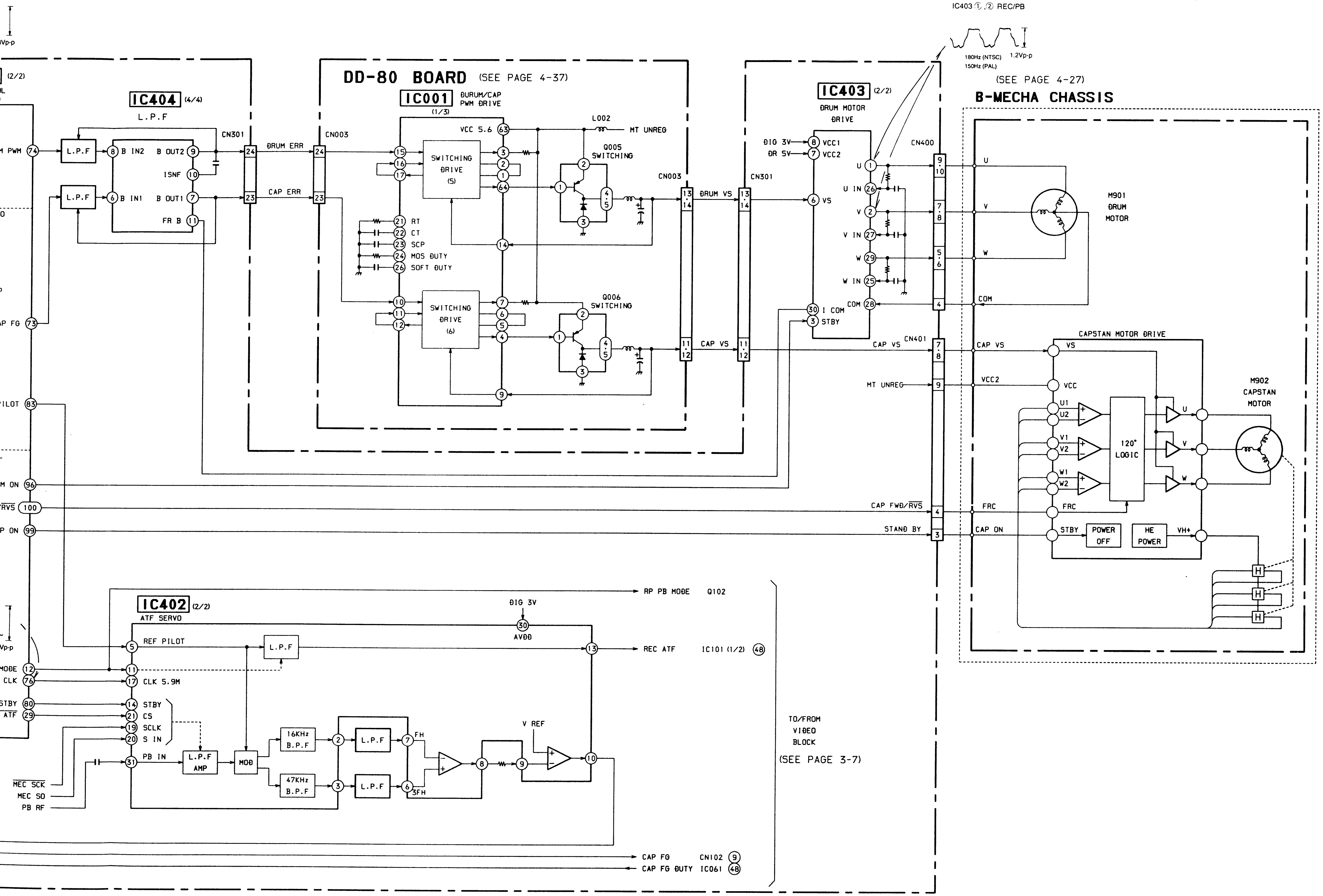
3-4. SYSTEM CONTROL BLOCK DIAGRAM


(SEE PAGE 4-27)
B-MECHA CHASSIS
FP-220 BOARD
M903 LOADING MOTOR
S901 MODE SW
A B C
FP-248 BOARD
DEW SENSOR
FP-355 BOARD
TAPE LED
D001
FP-356 BOARD
TAPE END SENSOR
Q002
FP-249 BOARD
TAPE TOP SENSOR
Q001
H001 S REEL SENSOR
H002 T REEL SENSOR
S001 ME/MP HI8 MP REC PROOF
S002 CC DOWN
VC-167 BOARD
(SEE PAGE 4-27)
CN403
LM (+)
LM (−)
M SW (A)
M SW (B)
M SW (C)
CN401
DEW
CN402
TAPE LED (K)
TAPE LED (A)
TAPE END (C)
TAPE TOP (C)
SENSOR VCC
DIG 3V
S REEL (−)
S REEL (+)
T REEL (−)
T REEL (+)
HALL COM
ME/MP
HI8 MP
REC PROOF
CC DOWN SW
IC404 (1/4) LOADING MOTOR DRIVE
MT 5V
MT UNREG
VM VCC2
OUT1 DEC1 DEC2 LIMIT EN
OUT2 LIMIT OUT
Q400 LED DRIVE
Q401 LED REG
MT UNREG
MT 5V
X400
IC404 (2/4) TAP TOP/END DET
END IN END OUT
TOP IN TOP OUT
IC404 (3/4) WAVE SHAPER
WAVE SHAPER
VCC1
DIG 3V
IC400 (1/2) SYSTEM CONTROL (MECHA CONT)
LOAD
UNLOAD
LM LIM CONT
LM LIM ON
MODE SW A
MODE SW B
MODE SW C
DEW
T/E LED ON
IC400 ④⓪ REC/PB
XTAL1
EXTAL1
11.895MHz (NTSC) 11.718MHz (PAL)
2.5Vp-p
TAPE END SENS
TAPE TOP SENS
S REEL FG
T REEL FG
ME/MP
HI8 MP
REC PROOF
IC400 ⑨⑦ REC/PB
30Hz (NTSC) 25Hz (PAL)
3Vp-p
RESET
STBY
MEC CS
MEC SO
MEC SI
HI SCK
IRIS PWM
HALL AD
CS PDR
PAL
LENS RESET LED
FOCUS RESET SENS
ZOOM RESET SENS
SG RESET
CS LOGOS
LOGOS/TG RESET
CS AFOPD
AFD/PDR RESET
CS TG
CAM VD
VA PB MODE
PBV
MMC SCK
MMC SO
MMC SI
CS EEPROM
EEPROM WE
SP/LP DET
CLOG DET
FE ON
BOTH REC
SP/LP
CS DA
VTR SYNC
CS LARK
JOG VD
JOG
V MUTE
RF SWP
CS AU
CS VISTA
EVER 3V
IC405
IC401 EEPROM
DIG 3V
SCK VCC
DT
DO
CS
RST
IC402 (1/2)
SP/LP DET
CLOG DET
IRIS PWM IC601 ⑤
HALL AD IC602 ⑧
CS PDR IC604 ③
PAL/NTSC IC604 ⑪
LENS RESET LED Q603
FC RESET SENS CN601 ㉑
ZM RESET SENS CN601 ②
SG RESET IC706 ⑤⑤
CS LOGOS IC706 ⑥⑨
LOGOS/TG RESET IC706 ⑦①
CS AFD IC705 ⑤
AFD/PDR RESET IC705 ⑦ . IC604 ⑨
CS TG IC702 ③⑨
CAM VD IC706 ⑤① . IC604 ①
VA PB MODE IC703 ①
PBV IC706 ⑥⑤
MEC SCK IC706 ⑥⑦
MEC SO IC706 ⑥⑧
MEC SI IC706 ⑦⓪
TO/FROM CAMERA BLOCK
(SEE PAGE 3-5, 3-6)
MEC SCK IC402 ⑲
MEC SO IC402 ⑳
PB RF IC402 ③①
TO SERVO BLOCK
(SEE PAGE 3-11)
MEC SCK IC201 ⑥④ . IC061 ②
MEC SO IC201 ⑥③ . IC061 ①
MEC SI IC501 ⑳
VA PB MODE Q208, 213
PB RF Q110, 111
FE ON Q104
BOTH REC IC101 ⑳
SP/LP Q120
CS DA IC061 ③
VTR SYNC IC201 ㉘ ㉙
CS LARK IC201 ⑥②
JOG VD IC201 ③③
JOG IC570 ㉒ . Q217
V MUTE IC570 ⑥ . Q217
RF SWP IC101 ㉑ . IC061 ⑥
CS AU IC501 ⑤⑧
TO/FROM VIDEO BLOCK
(SEE PAGE 3-7)
CV VISTA CN702 ②
MV RESET CN702 ⑥
MV STBY CN702 ①
TO CAMERA BLOCK
(SEE PAGE 3-6)
TRV21/21E MODEL
CN300
CC DOWN SW
MV RESET
MV STBY
CS MEC
HI SI
HI SO
HI SCK
PB V
VA PB
CN480 ③③ CC DOWN SW
CN480 ③① MV RESET
CN480 ③② MV STBY
CN480 ③⑤ CS MEC
CN480 ③⑦ HI SI
CN480 ③⑥ HI SO
CN480 ③⑧ HI SCK
CN480 ③④ PB V
CN480 ㉒ VA PB MODE
TO/FROM MODE CONT BLOCK
(SEE PAGE 3-16)
16

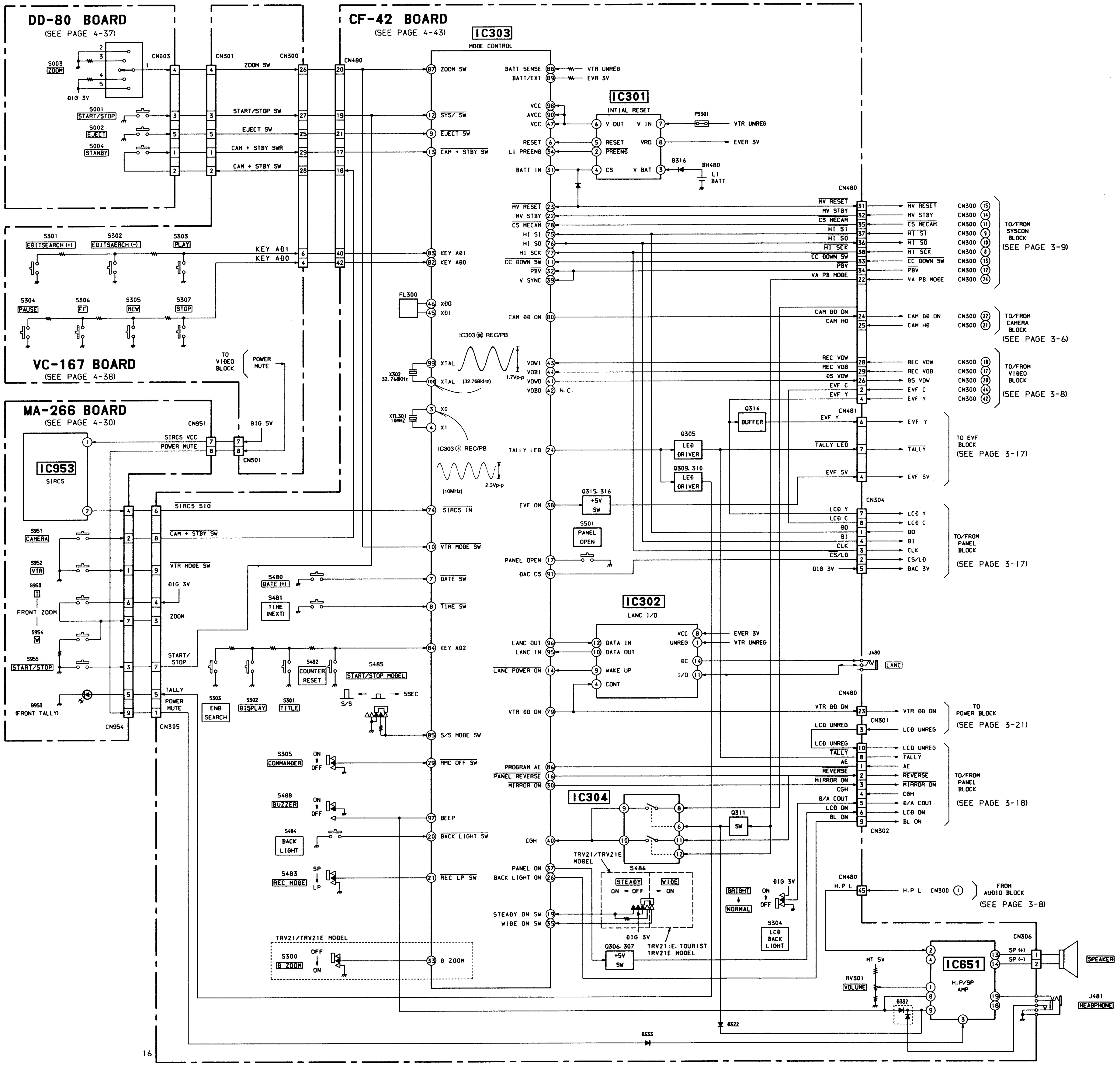
3-5. SERVO BLOCK DIAGRAM


IC403 ⑱ REC/PB
IC400 ⑰ REC/PB
360Hz (NTSC) 300Hz (PAL)
3Vp-p
(SEE PAGE 4-27)
B-MECHA CHASSIS
DRUM
FG
PG
CAPSTAN FG
VCC1
(+)
(-)
CAP FG WAVE SHAPER
VC-167 BOARD
(SEE PAGE 4-27)
CN400
FG
FG/PG COM
PG
IC400 (2/2)
SERVO CONTROL (MECHA CONT)
FG IN
FG OUT
V REF
PG IN
PG OUT
IC403 (1/2)
WAVE SHAPER
DRUM FG
DRUM PG
DRUM PWM
IC404 (4/4)
L.P.F
B IN2
B OUT2
ISNF
B IN1
B OUT1
FR B
CN301
DRUM ERR
CAP ERR
CAPSTAN SERVO
IC403 ⑪ REC/PB
IC400 ⑯ REC/PB
30Hz (NTSC) 25Hz (PAL)
IC400 ⑱,⑮ REC/PB
822Hz (NTSC) 1.148kHz (PAL)
CN401
DIG 3V
FG OUT
OFFSET ADJ
CAP FG
ATF ERROR
REF PILOT
MECHA CONTROL
DRUM ON
C FG HMS
CAP FWD/RVS
CAP ON
EVER 3V
AVREF
AVDD
VDD
IC400 ⑯ REC/PB
5.947MHz (NTSC) 5.859MHz (PAL)
3.8Vp-p
RP PB MODE
5.9M ATF CLK
ATF STBY
CF ATF
DD-80 BOARD (SEE PAGE 4-37)
IC001 DRUM/CAP PWM DRIVE (1/3)
CN003
VCC 5.6
L002
MT UNREG
Q005 SWITCHING
SWITCHING DRIVE (5)
SWITCHING DRIVE (6)
Q006 SWITCHING
RT
CT
SCP
MOS DUTY
SOFT DUTY
DRUM VS
CAP VS
IC403 (2/2)
DRUM MOTOR DRIVE
DIG 3V
DR 5V
VCC1
VCC2
VS
U
U IN
V
V IN
W
W IN
COM
I COM
STBY
CN40
CN401
CAP VS
MT UNREG
CAP FWD/RVS
STAND BY
IC402 (2/2)
ATF SERVO
DIG 3V
AVDD
REF PILOT
L.P.F
CLK 5.9M
STBY
CS
SCLK
S IN
PB IN
L.P.F AMP
MOD
16KHz B.P.F
47KHz B.P.F
FH
3FH
V REF
RP PB MODE Q102
REC ATF IC101 (1/2) ㊽
FROM SYSCON BLOCK
IC400 (1/2) ⑲ MEC SCK
IC400 (1/2) ⑱ MEC SO
IC402 (1/2) ㉙ PB RF
(SEE PAGE 3-10)
TO/FROM VIDEO BLOCK
(SEE PAGE 3-7)
CAP FG CN102 ⑨
CAP FG DUTY IC061 ㊽

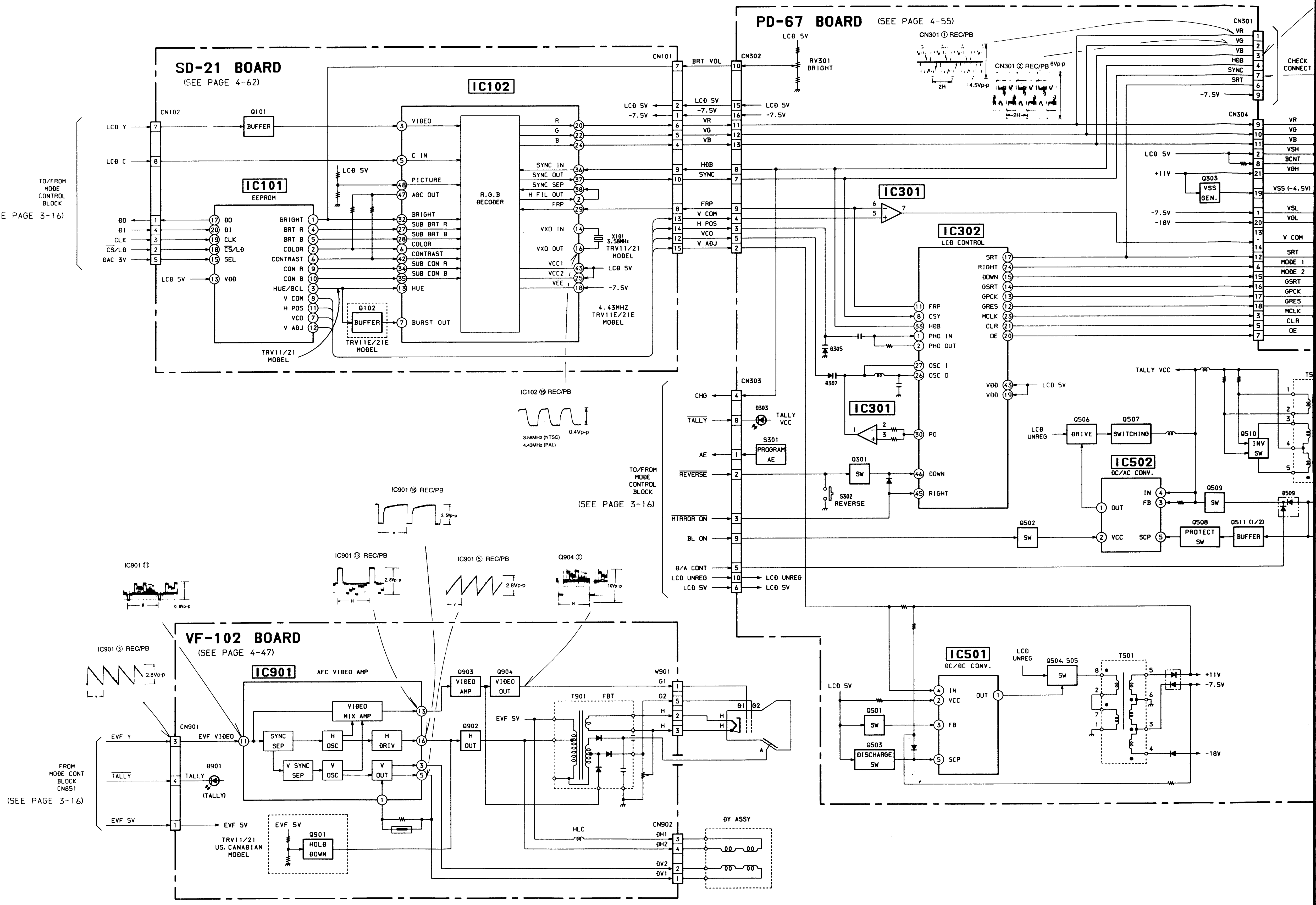
16

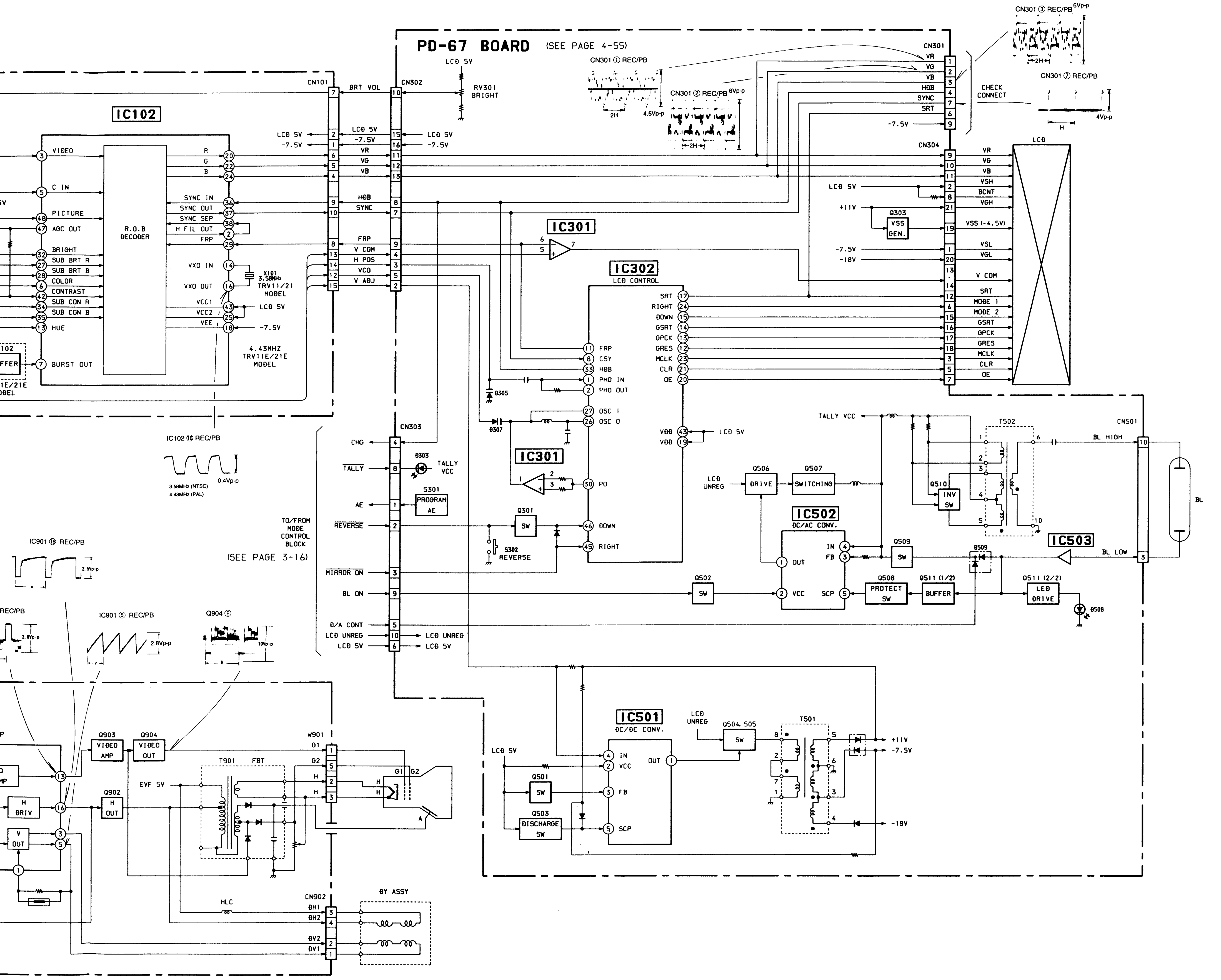

IC403 ①,② REC/PB
180Hz (NTSC)
150Hz (PAL)
1.2Vp-p
DD-80 BOARD (SEE PAGE 4-37)
IC001 DRUM/CAP PWM DRIVE (1/3)
IC404 (4/4) L.P.F
IC403 (2/2) DRUM MOTOR DRIVE
(SEE PAGE 4-27)
B-MECHA CHASSIS
L.P.F
B IN2
B OUT2
ISNF
B IN1
B OUT1
FR B
CN301
CN003
CN400
CN401
DRUM ERR
CAP ERR
VCC 5.6
L002
MT UNREG
Q005 SWITCHING
Q006 SWITCHING
SWITCHING DRIVE (5)
SWITCHING DRIVE (6)
RT
CT
SCP
MOS DUTY
SOFT DUTY
DRUM VS
CAP VS
DIG 3V
DR 5V
VCC1
VCC2
VS
U
U IN
V
V IN
W
W IN
COM
I COM
STBY
M901 DRUM MOTOR
CAPSTAN MOTOR DRIVE
VCC2
VCC
U1
U2
V1
V2
W1
W2
120° LOGIC
FRC
CAP ON
POWER OFF
HE POWER
VH+
M902 CAPSTAN MOTOR
H
CAP FWD/RVS
STAND BY
M PWM 74
P FG 73
PILOT 83
M ON 96
RVS 100
P ON 99
MODE 12
CLK 76
STBY 80
ATF 29
MEC SCK
MEC SO
PB RF
IC402 (2/2) ATF SERVO
REF PILOT
CLK 5.9M
CS
SCLK
S IN
PB IN
L.P.F AMP
MOD
16KHz B.P.F
47KHz B.P.F
FH
3FH
V REF
AVDD
RP PB MODE Q102
REC ATF IC101 (1/2) ㊽
CAP FG CN102 ⑨
CAP FG DUTY IC061 ㊽
TO/FROM VIDEO BLOCK
(SEE PAGE 3-7)

3-6. MODE CONTROL BLOCK DIAGRAM

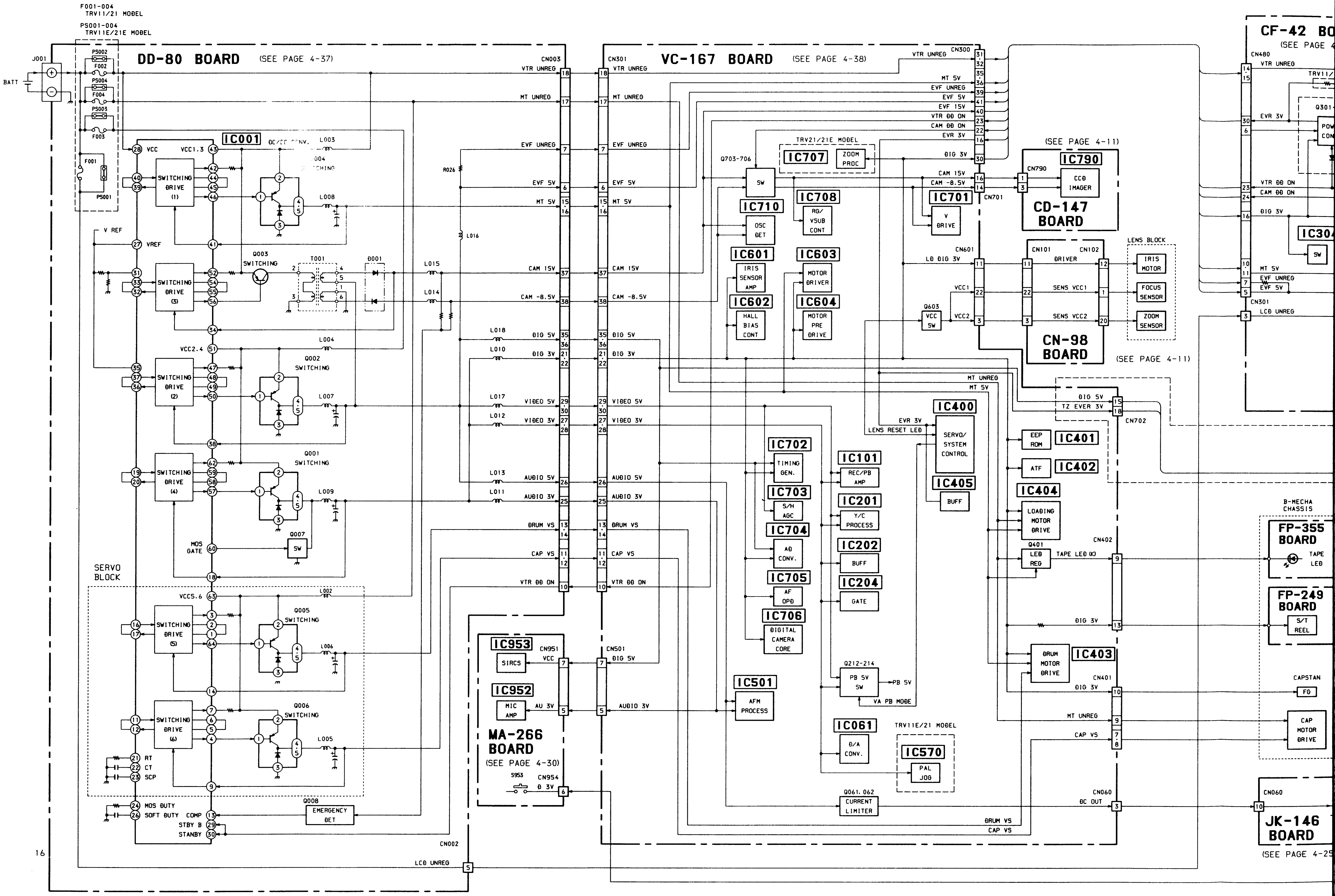

DD-80 BOARD
(SEE PAGE 4-37)
S003 ZOOM
DIG 3V
S001 START/STOP
S002 EJECT
S004 STANBY
CN003
CN301
CN300
ZOOM SW
START/STOP SW
EJECT SW
CAM + STBY SWR
CAM + STBY SW
VC-167 BOARD
(SEE PAGE 4-38)
S301 EDITSEARCH (+)
S302 EDITSAERCH (−)
S303 PLAY
S304 PAUSE
S306 FF
S305 REW
S307 STOP
KEY AD1
KEY AD0
TO VIDEO BLOCK
POWER MUTE
MA-266 BOARD
(SEE PAGE 4-30)
CN951
DIG 5V
SIRCS VCC
POWER MUTE
CN501
IC953
SIRCS
SIRCS SIG
S951 CAMERA
CAM + STBY SW
S952 VTR
VTR MODE SW
S953 T
FRONT ZOOM
S954 W
DIG 3V
ZOOM
S955 START/STOP
START/STOP
TALLY
POWER MUTE
D953 (FRONT TALLY)
CN954
CN305
CF-42 BOARD
(SEE PAGE 4-43)
IC303
MODE CONTROL
CN480
ZOOM SW
SYS/ SW
EJECT SW
CAM + STBY SW
KEY AD1
KEY AD0
FL300
XD0
XD1
IC303 ⑩⓪ REC/PB
XTAL
X302 32.768KHz
(32.768kHz)
1.7Vp-p
XTL301 10MHZ
X0
X1
IC303 ③ REC/PB
(10MHz)
2.3Vp-p
SIRCS IN
VTR MODE SW
S480 DATE (+)
DATE SW
S481 TIME (NEXT)
TIME SW
KEY AD2
S303 END SEARCH
S302 DISPLAY
S301 TITLE
S482 COUNTER RESET
S485 START/STOP MODEL
S/S
5SEC
S/S MODE SW
S305 COMMANDER
ON OFF
RMC OFF SW
S488 BUZZER
BEEP
S484 BACK LIGHT
BACK LIGHT SW
S483 REC MODE
SP LP
REC LP SW
TRV21/TRV21E MODEL
S300 D ZOOM
D ZOOM
BATT SENSE
BATT/EXT
VTR UNREG
EVR 3V
VCC
AVCC
IC301
INTIAL RESET
V OUT
V IN
PS301
RESET
VRO
EVER 3V
LI PREEND
PREEND
BATT IN
CS
V BAT
D316
BH480
LI BATT
MV RESET
MV STBY
CS MECAM
HI SI
HI SO
HI SCK
CC DOWN SW
PBV
V SYNC
VA PB MODE
CAM DD ON
CAM HD
VOWI
VOBI
VOWO
VOBO
N.C.
REC VOW
REC VOB
DS VOW
EVF C
EVF Y
TO/FROM SYSCON BLOCK
(SEE PAGE 3-9)
TO/FROM CAMERA BLOCK
(SEE PAGE 3-6)
TO/FROM VIDEO BLOCK
(SEE PAGE 3-8)
CN300
Q314 BUFFER
CN481
TALLY LED
Q305 LED DRIVER
Q309, 310 LED DRIVER
TALLY
EVF 5V
TO EVF BLOCK
(SEE PAGE 3-17)
EVF ON
Q315, 316 +5V SW
S501 PANEL OPEN
PANEL OPEN
DAC CS
CN304
LCD Y
LCD C
DO
DI
CLK
CS/LD
DAC 3V
TO/FROM PANEL BLOCK
(SEE PAGE 3-17)
IC302
LANC I/O
LANC OUT
LANC IN
LANC POWER ON
DATA IN
DATA OUT
WAKE UP
CONT
VCC
UNREG
DC
I/O
J480
LANC
VTR DD ON
TO POWER BLOCK
(SEE PAGE 3-21)
CN301
LCD UNREG
PROGRAM AE
PANEL REVERSE
MIRROR ON
AE
REVERSE
CGH
D/A COUT
LCD ON
BL ON
CN302
TO/FROM PANEL BLOCK
(SEE PAGE 3-18)
IC304
Q311 SW
TRV21/TRV21E MODEL
S486
STEADY
WIDE
ON ← OFF → ON
PANEL ON
BACK LIGHT ON
STEADY ON SW
WIDE ON SW
Q306, 307 +5V SW
TRV21:E, TOURIST TRV21E MODEL
BRIGHT NORMAL
S304 LCD BACK LIGHT
H.P L
FROM AUDIO BLOCK
(SEE PAGE 3-8)
IC651
H.P/SP AMP
MT 5V
RV301 VOLUME
D332
D322
D333
CN306
SP (+)
SP (−)
SPEAKER
J481
HEADPHONE
16

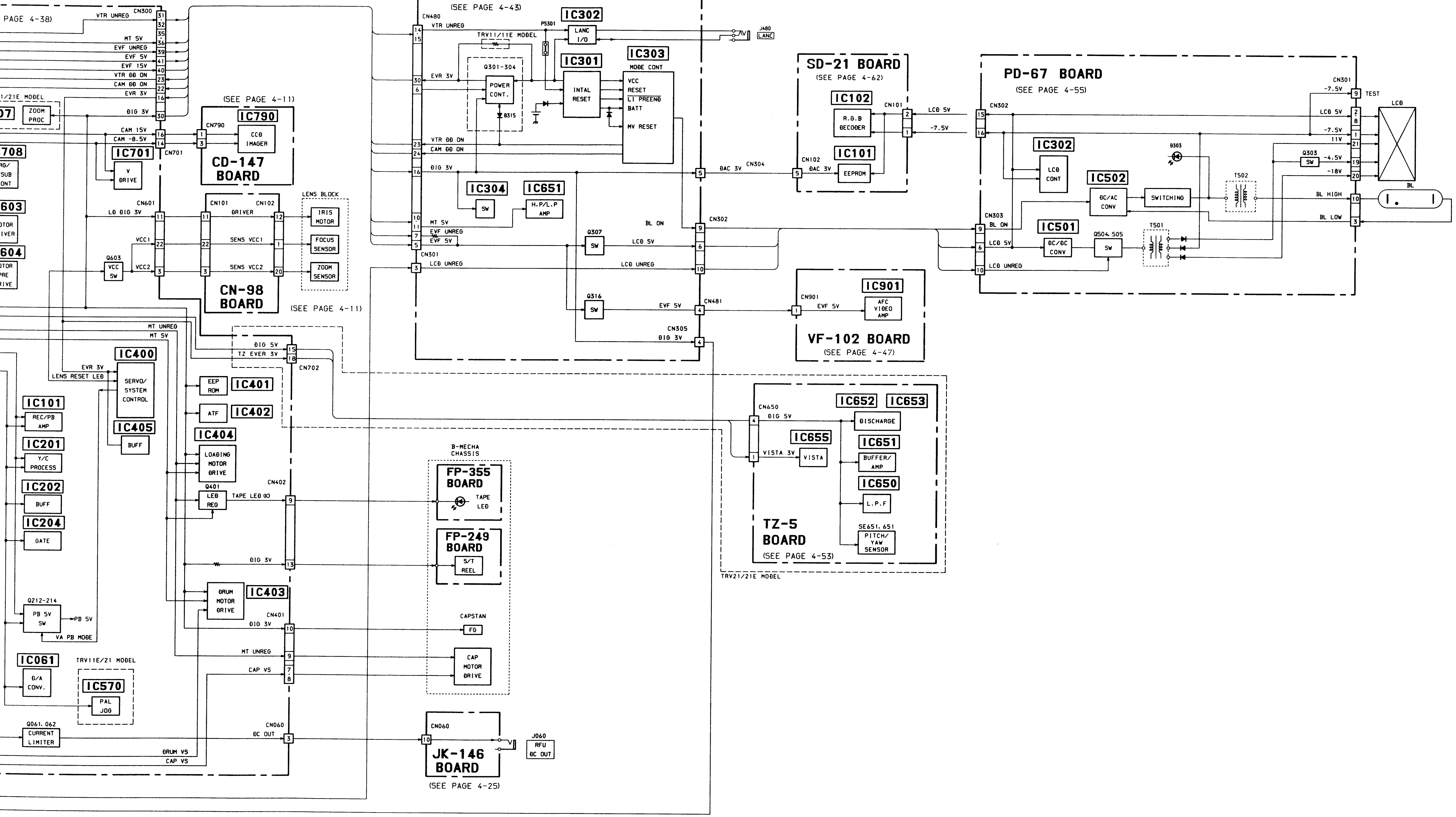
3-7. LCD/EVF BLOCK DIAGRAM


SD-21 BOARD
(SEE PAGE 4-62)
PD-67 BOARD
(SEE PAGE 4-55)
VF-102 BOARD
(SEE PAGE 4-47)
IC101
EEPROM
IC102
R.G.B DECODER
Q101 BUFFER
Q102 BUFFER
TRV11E/21E MODEL
TRV11/21 MODEL
X101 3.58MHz TRV11/21 MODEL
4.43MHZ TRV11E/21E MODEL
CN101
CN102
CN301
CN302
CN303
CN304
LCD Y
LCD C
TO/FROM MODE CONTROL BLOCK
(SEE PAGE 3-16)
D0
D1
CLK
CS/LD
DAC 3V
LCD 5V
-7.5V
VIDEO
C IN
PICTURE
AGC OUT
BRIGHT
SUB BRT R
SUB BRT B
COLOR
CONTRAST
SUB CON R
SUB CON B
HUE
BURST OUT
SYNC IN
SYNC OUT
SYNC SEP
H FIL OUT
FRP
VXO IN
VXO OUT
VCC1
VCC2
VEE
BRT R
BRT B
CON R
CON B
HUE/BCL
V COM
H POS
VCO
V ADJ
SEL
VDD
BRT VOL
RV301 BRIGHT
VR
VG
VB
HDB
SYNC
SRT
CHECK CONNECT
CN301 ① REC/PB
CN301 ② REC/PB 6Vp-p
4.5Vp-p
2H
IC102 ⑯ REC/PB
0.4Vp-p
3.58MHz (NTSC)
4.43MHz (PAL)
IC301
IC302
LCD CONTROL
FRP
CSY
PHO IN
PHO OUT
OSC I
OSC O
PO
DOWN
RIGHT
GSRT
GPCK
GRES
MCLK
CLR
OE
MODE 1
MODE 2
VSH
BCNT
VGH
VSS (-4.5V)
VSL
VGL
Q303 VSS GEN.
+11V
-18V
D305
D307
D303
TALLY VCC
CHG
TALLY
AE
S301 PROGRAM AE
REVERSE
S302 REVERSE
Q301 SW
MIRROR ON
BL ON
D/A CONT
LCD UNREG
IC502
DC/AC CONV.
Q506 DRIVE
Q507 SWITCHING
Q510 INV SW
Q509 SW
D509
Q502 SW
Q508 PROTECT SW
Q511 (1/2) BUFFER
IN
FB
OUT
VCC
SCP
IC501
DC/DC CONV.
Q501 SW
Q503 DISCHARGE SW
Q504, 505 SW
T501
IC901 ⑪
0.8Vp-p
IC901 ⑯ REC/PB
2.5Vp-p
IC901 ⑬ REC/PB
2.8Vp-p
IC901 ⑤ REC/PB
Q904 Ⓔ
10Vp-p
IC901 ③ REC/PB
IC901
AFC VIDEO AMP
VIDEO MIX AMP
SYNC SEP
H OSC
H DRIV
V SYNC SEP
V OSC
V OUT
Q903 VIDEO AMP
Q904 VIDEO OUT
Q902 H OUT
Q901 HOLD DOWN
TRV11/21 US, CANADIAN MODEL
T901 FBT
W901
G1
G2
HLC
CN902
DY ASSY
DH1
DH2
DV2
DV1
CN901
EVF Y
EVF VIDEO
TALLY
D901
(TALLY)
EVF 5V
FROM MODE CONT BLOCK CN851
(SEE PAGE 3-16)


PD-67 BOARD (SEE PAGE 4-55)
IC102
R.G.B DECODER
IC301
IC302
LCD CONTROL
IC501
DC/DC CONV.
IC502
DC/AC CONV.
IC503
CN101
CN302
CN301
CN303
CN304
CN501
CN902
W901
LCD
BL
T501
T502
T901
FBT
DY ASSY
RV301 BRIGHT
S301 PROGRAM AE
S302 REVERSE
Q301 SW
Q303 VSS GEN.
Q501 SW
Q502 SW
Q503 DISCHARGE SW
Q504, 505 SW
Q506 DRIVE
Q507 SWITCHING
Q508 PROTECT SW
Q509 SW
Q510 INV SW
Q511 (1/2) BUFFER
Q511 (2/2) LED DRIVE
Q902 H OUT
Q903 VIDEO AMP
Q904 VIDEO OUT
CHECK CONNECT
TO/FROM MODE CONTROL BLOCK (SEE PAGE 3-16)
CN301 ① REC/PB
CN301 ② REC/PB
CN301 ③ REC/PB
CN301 ⑦ REC/PB
IC102 ⑯ REC/PB
IC901 ⑯ REC/PB
IC901 ⑤ REC/PB
Q904 Ⓔ
3.58MHz (NTSC)
4.43MHz (PAL)
X101 3.58MHz TRV11/21 MODEL
4.43MHZ TRV11E/21E MODEL
VIDEO
C IN
PICTURE
AGC OUT
BRIGHT
SUB BRT R
SUB BRT B
COLOR
CONTRAST
SUB CON R
SUB CON B
HUE
BURST OUT
SYNC IN
SYNC OUT
SYNC SEP
H FIL OUT
FRP
VXO IN
VXO OUT
VCC1
VCC2
VEE
BRT VOL
LCD 5V
-7.5V
VR
VG
VB
HDB
SYNC
V COM
H POS
VCO
V ADJ
SRT
RIGHT
DOWN
GSRT
GPCK
GRES
MCLK
CLR
OE
CSY
PHO IN
PHO OUT
OSC I
OSC O
PD
VDD
VSH
BCNT
VGH
VSS (-4.5V)
VSL
VGL
MODE 1
MODE 2
CHG
TALLY
TALLY VCC
AE
REVERSE
MIRROR ON
BL ON
D/A CONT
LCD UNREG
BL HIGH
BL LOW
+11V
-18V
IN
FB
OUT
VCC
SCP
EVF 5V
HLC
DH1
DH2
DV2
DV1
G1
G2
H
D305
D307
D303
D508
D509

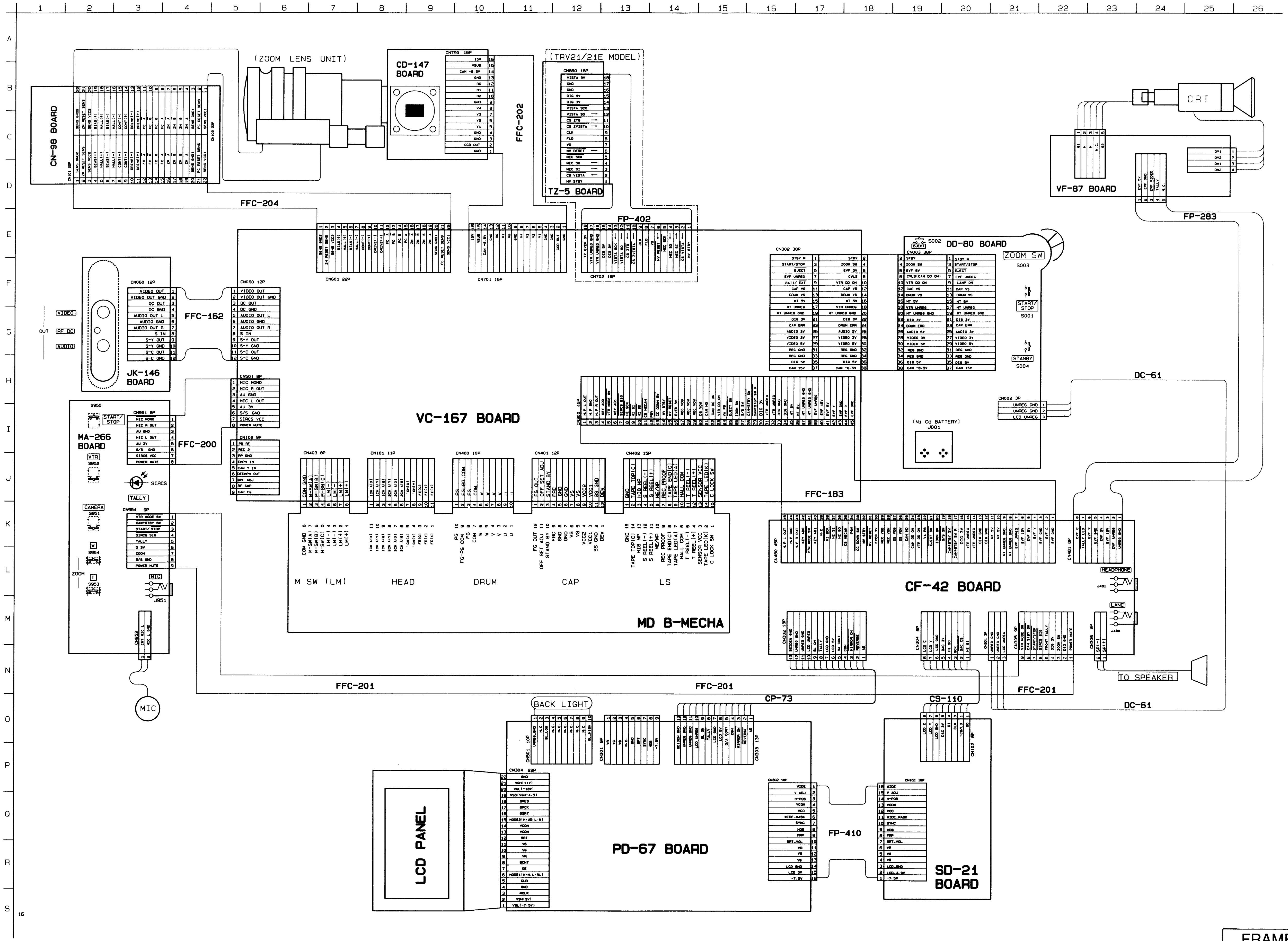
3-8. POWER BLOCK DIAGRAM


F001-004
TRV11/21 MODEL
PS001-004
TRV11E/21E MODEL
J001
BATT
PS002
F002
PS004
F004
PS003
F003
F001
PS001
DD-80 BOARD
(SEE PAGE 4-37)
IC001
DC/DC CONV.
VCC
VCC1.3
SWITCHING DRIVE (1)
SWITCHING DRIVE (3)
SWITCHING DRIVE (2)
SWITCHING DRIVE (4)
SWITCHING DRIVE (5)
SWITCHING DRIVE (6)
V REF
VREF
Q003 SWITCHING
T001
D001
Q002 SWITCHING
Q001 SWITCHING
Q004 SWITCHING
Q005 SWITCHING
Q006 SWITCHING
Q007 SW
Q008 EMERGENCY DET
L003
L008
L004
L007
L009
L002
L006
L005
L015
L014
L016
L018
L010
L017
L012
L013
L011
R026
VCC2.4
VCC5.6
MOS GATE
SERVO BLOCK
RT
CT
SCP
MOS DUTY
SOFT DUTY
COMP
STBY B
STANBY
CN003
CN002
VTR UNREG
MT UNREG
EVF UNREG
EVF 5V
MT 5V
CAM 15V
CAM -8.5V
DIG 5V
DIG 3V
VIDEO 5V
VIDEO 3V
AUDIO 5V
AUDIO 3V
DRUM VS
CAP VS
VTR DD ON
LCD UNREG
CN301
VC-167 BOARD
(SEE PAGE 4-38)
CN300
MT 5V
EVF UNREG
EVF 5V
EVF 15V
VTR DD ON
CAM DD ON
EVR 3V
DIG 3V
CAM 15V
CAM -8.5V
TRV21/21E MODEL
IC707 ZOOM PROC
Q703-706 SW
IC710 OSC DET
IC708 RG/VSUB CONT
IC701 V DRIVE
IC601 IRIS SENSOR AMP
IC603 MOTOR DRIVER
IC602 HALL BIAS CONT
IC604 MOTOR PRE DRIVE
CN701
CN601
LD DIG 3V
VCC1
VCC2
Q603 VCC SW
MT UNREG
MT 5V
EVR 3V
LENS RESET LED
IC400 SERVO/SYSTEM CONTROL
IC405 BUFF
IC401 EEP ROM
IC402 ATF
IC404 LOADING MOTOR DRIVE
Q401 LED REG
TAPE LED (K)
CN402
IC702 TIMING GEN.
IC703 S/H AGC
IC704 AD CONV.
IC705 AF OPD
IC706 DIGITAL CAMERA CORE
IC101 REC/PB AMP
IC201 Y/C PROCESS
IC202 BUFF
IC204 GATE
IC501 AFM PROCESS
Q212-214 PB 5V SW
PB 5V
VA PB MODE
IC061 D/A CONV.
TRV11E/21 MODEL
IC570 PAL JOG
Q061, 062 CURRENT LIMITER
IC403 DRUM MOTOR DRIVE
CN401
DIG 3V
MT UNREG
CAP VS
CN060
DC OUT
DRUM VS
CAP VS
CN501
DIG 5V
AUDIO 3V
MA-266 BOARD
(SEE PAGE 4-30)
IC953 SIRCS
CN951
VCC
IC952 MIC AMP
AU 3V
S953
CN954
D 3V
(SEE PAGE 4-11)
CN790
IC790 CCD IMAGER
CD-147 BOARD
CN101
CN102
DRIVER
SENS VCC1
SENS VCC2
CN-98 BOARD
(SEE PAGE 4-11)
LENS BLOCK
IRIS MOTOR
FOCUS SENSOR
ZOOM SENSOR
DIG 5V
TZ EVER 3V
CN702
CF-42 BO
(SEE PAGE 4
CN480
VTR UNREG
TRV11/
Q301
EVR 3V
VTR DD ON
CAM DD ON
DIG 3V
IC30
SW
MT 5V
EVF UNREG
EVF 5V
CN301
LCD UNREG
B-MECHA CHASSIS
FP-355 BOARD
TAPE LED
FP-249 BOARD
S/T REEL
CAPSTAN
FG
CAP MOTOR DRIVE
CN060
JK-146 BOARD
(SEE PAGE 4-25
16


CF-42 BOARD
(SEE PAGE 4-43)
IC302
LANC I/O
IC301
INTAL RESET
IC303
MODE CONT
VCC
RESET
LI PREEND
BATT
MV RESET
Q301-304
POWER CONT.
TRV11/11E MODEL
PS301
D315
IC304
SW
IC651
H.P/L.P AMP
Q307
SW
Q316
SW
CN480
VTR UNREG
EVR 3V
VTR DD ON
CAM DD ON
DIG 3V
MT 5V
EVF UNREG
EVF 5V
CN301
LCD UNREG
BL ON
LCD 5V
EVF 5V
CN302
CN481
CN305
DIG 3V
CN304
DAC 3V
J480
LANC
SD-21 BOARD
(SEE PAGE 4-62)
IC102
R.G.B DECODER
IC101
EEPROM
CN101
CN102
LCD 5V
-7.5V
PD-67 BOARD
(SEE PAGE 4-55)
CN302
CN301
-7.5V
TEST
LCD 5V
11V
Q303
SW
-4.5V
-18V
LCD
IC302
LCD CONT
IC502
DC/AC CONV
SWITCHING
T502
D303
BL HIGH
BL LOW
BL
CN303
BL ON
LCD 5V
LCD UNREG
IC501
DC/DC CONV
Q504, 505
SW
T501
VF-102 BOARD
(SEE PAGE 4-47)
IC901
AFC VIDEO AMP
CN901
EVF 5V
CD-147 BOARD
(SEE PAGE 4-11)
IC790
CCD IMAGER
CN790
CN-98 BOARD
(SEE PAGE 4-11)
CN101
CN102
DRIVER
SENS VCC1
SENS VCC2
LENS BLOCK
IRIS MOTOR
FOCUS SENSOR
ZOOM SENSOR
PAGE 4-38)
CN300
VTR UNREG
MT 5V
EVF UNREG
EVF 5V
EVF 15V
VTR DD ON
CAM DD ON
EVR 3V
DIG 3V
CAM 15V
CAM -8.5V
1/21E MODEL
ZOOM PROC
IC701
V DRIVE
CN701
CN601
LD DIG 3V
VCC1
VCC2
Q603
VCC SW
MT UNREG
MT 5V
DIG 5V
TZ EVER 3V
CN702
EVR 3V
LENS RESET LED
IC400
SERVO/ SYSTEM CONTROL
IC405
BUFF
IC401
EEP ROM
IC402
ATF
IC404
LOADING MOTOR DRIVE
Q401
LED REG
TAPE LED
CN402
DIG 3V
IC403
DRUM MOTOR DRIVE
CN401
DIG 3V
MT UNREG
CAP VS
CN060
DC OUT
DRUM VS
CAP VS
IC101
REC/PB AMP
IC201
Y/C PROCESS
IC202
BUFF
IC204
GATE
Q212-214
PB 5V SW
PB 5V
VA PB MODE
IC061
D/A CONV.
TRV11E/21 MODEL
IC570
PAL JOG
Q061, 062
CURRENT LIMITER
B-MECHA CHASSIS
FP-355 BOARD
TAPE LED
FP-249 BOARD
S/T REEL
CAPSTAN
FG
CAP MOTOR DRIVE
CN060
JK-146 BOARD
(SEE PAGE 4-25)
J060
RFU DC OUT
TZ-5 BOARD
(SEE PAGE 4-53)
CN650
DIG 5V
VISTA 3V
IC655
VISTA
IC652
IC653
DISCHARGE
IC651
BUFFER/ AMP
IC650
L.P.F
SE651, 651
PITCH/ YAW SENSOR
TRV21/21E MODEL

SECTION 4
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

4-1. FRAME SCHEMATIC DIAGRAM

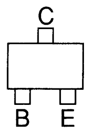

CN-98 BOARD
(ZOOM LENS UNIT)
CD-147 BOARD
CN790 16P
FFC-202
(TRV21/21E MODEL)
CN650 18P
TZ-5 BOARD
CRT
VF-87 BOARD
FP-283
FFC-204
FP-402
CN601 22P
CN701 16P
CN702 18P
CN302 38P
DD-80 BOARD
S002 EJECT
ZOOM SW S003
START/STOP S001
STANBY S004
CN003 38P
(Ni Cd BATTERY) J001
CN002 3P
DC-61
JK-146 BOARD
CN050 12P
CN060 12P
FFC-162
VIDEO
RF DC
AUDIO
OUT
MA-266 BOARD
S955 START/STOP
CN951 8P
CN501 8P
FFC-200
CN102 9P
VTR S952
SIRCS
TALLY
CAMERA S951
CN954 9P
W S954
ZOOM
T S953
MIC J951
CN953
MIC
VC-167 BOARD
CN300 45P
CN403 8P
CN101 11P
CN400 10P
CN401 12P
CN402 15P
M SW (LM)
HEAD
DRUM
CAP
LS
MD B-MECHA
FFC-183
CF-42 BOARD
CN480 45P
CN481 8P
HEADPHONE J481
LANC J480
CN302 13P
CN304 8P
CN301 3P
CN305 9P
CN306 2P
TO SPEAKER
FFC-201
CP-73
CS-110
BACK LIGHT
CN501 10P
CN301 8P
CN303 13P
CN304 22P
LCD PANEL
PD-67 BOARD
CN302 16P
FP-410
CN101 16P
CN102 8P
SD-21 BOARD

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

- **For printed wiring boards.**
- •—— : indicated a lead wire mounted on the component side.
- ▨ :Pattern from the side which enables seeing. (The other layers' patterns are not indicated.)
- ● :Through hole is omitted.
- Printed wiring board which has four layers structure but inner two layers' patterns are omitted.

Caution:
SIDE A: The pattern face side which is seen when the upper case is opened.
SIDE B: The opposite pattern face side to the pattern seen when the upper case is opened.

- Chip parts (3-terminal transistor)



C: Collector
B: Base
E: Emitter

- **For schematic diagrams.**
- Caution when replacing chip parts.. New parts must be attached after removal of chip. Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistor are in ohms, 1/4W unless otherwise noted. Chip resistor are 1/10W unless otherwise noted. kΩ: 1000Ω, MΩ, : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μ μF. 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊠ : nonflammable resistor.
- ∿ : fusible resistor.
- ☐ : panel designation.
- △ : internal component.
- ☐ : adjustment for repair. *
- ▬ : B+ Line. *
- ▬ ▬ : B− Line. *
- ⇨ : IN/OUT direction of (+,−) B LINE. *
- Circled numbers refer to waveforms. *
- Signal name

*E/—L→E/$\overline{L}$ *—VAPB→$\overline{VAPB}$
—EDIT→$\overline{EDIT}$ *VAPB→VAPB

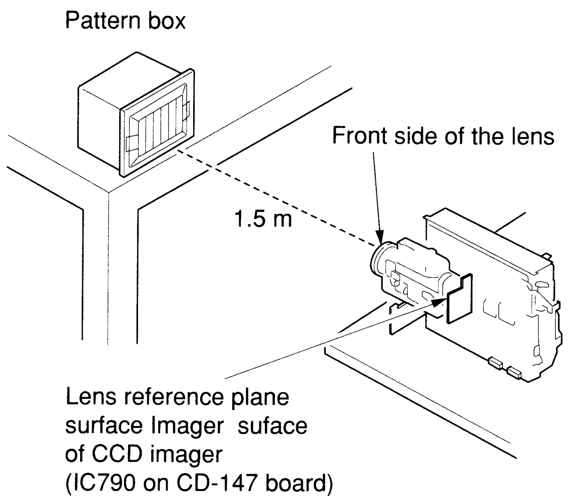
NOTE: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- * : indicated by the color red.

- Voltages and waveforms are measured between the measurement points and ground when camera shoots color bar chart of pattern box. They are reference values * and reference waveforms. (VOM of DC 10 MΩ input impedance is used.).
- Voltage values change depending upon input impedance of VOM used.)

1. Connection



2. Adjust the distance so that the output waveform of Fig. a and the Fig. b can be obtain.

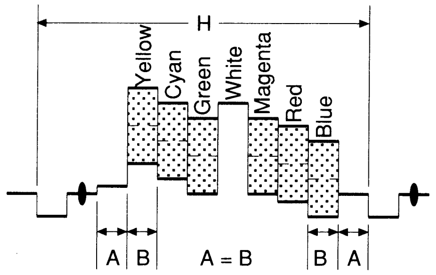


Fig. a (Video output terminal output waveform)

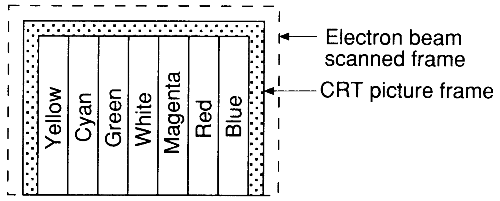


Fig. b (Picture on monitor TV)

Note: Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spéc-ifie.

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

VC-167 BOARD

C061	(B)F-2	C202	(B)E-3	C407	(A)D-8	C546	(B)C-1	C740	(B)G-8	IC705	(A)F-7	Q065	(A)E-2	R082	(B)E-2	R178	(B)A
C069	(B)D-3	C203	(B)F-3	C408	(A)D-8	C548	(A)C-2	C741	(B)G-9	IC706	(B)F-8	Q101	(A)A-5	R083	(B)E-2	R179	(B)A
C072	(A)D-7	C204	(B)E-3	C409	(A)A-10	C550	(B)A-2	C742	(B)G-9	IC707	(A)F-8	Q102	(A)B-5	R084	(A)E-2	R180	(A)A
C073	(B)D-6	C205	(B)F-3	C411	(B)B-9	C554	(A)C-1	C745	(B)E-8	IC708	(A)G-5	Q104	(B)B-6	R085	(B)E-2	R181	(A)A
C075	(A)F-2	C206	(B)F-3	C412	(B)B-9	C555	(A)C-2	C746	(B)F-9	IC709	(B)G-9	Q106	(B)A-6	R086	(A)D-2	R182	(A)A
C076	(B)E-2	C207	(A)E-4	C413	(A)A-9	C556	(A)C-2	C749	(A)F-7	IC710	(B)G-7	Q107	(B)A-6	R087	(B)E-2	R183	(A)A
C077	(B)E-2	C208	(A)E-4	C414	(A)A-8	C557	(A)C-3	C750	(A)F-7			Q108	(B)B-4	R088	(B)E-2	R184	(A)B
C078	(B)E-2	C209	(B)F-4	C415	(A)A-7	C558	(B)C-2	C751	(A)F-6	L061	(A)E-1	Q109	(B)B-4	R091	(B)E-2	R185	(B)A
C101	(B)A-4	C210	(A)F-3	C416	(B)D-9	C561	(B)A-2	C754	(A)E-7	L062	(B)D-6	Q110	(A)B-4	R092	(B)E-2	R186	(B)A
C102	(B)A-5	C211	(A)F-3	C417	(A)C-9	C571	(A)D-1	C755	(A)F-6	L063	(A)G-2	Q111	(A)B-4	R094	(B)E-1	R187	(B)A
C103	(B)A-4	C212	(B)F-4	C418	(A)B-9	C572	(A)D-1	C757	(A)F-6	L101	(A)A-4	Q112	(A)B-5	R101	(B)B-6	R188	(B)B
C104	(B)A-5	C213	(B)F-3	C419	(B)C-9	C573	(A)E-1	C758	(B)E-6	L102	(A)A-5	Q113	(A)B-5	R102	(A)B-4	R189	(B)B
C106	(A)A-6	C214	(B)F-3	C420	(A)C-9	C574	(A)D-1	C759	(B)E-7	L103	(A)B-6	Q114	(B)B-6	R103	(A)B-5	R190	(B)A
C107	(B)B-6	C215	(A)E-3	C421	(A)C-9	C575	(A)D-1	C760	(A)G-8	L104	(B)B-6	Q120	(A)C-5	R104	(A)A-5	R191	(B)B
C108	(B)A-6	C216	(B)G-2	C423	(A)A-7	C576	(A)D-1	C761	(A)F-9	L105	(B)B-5	Q123	(B)B-3	R105	(A)B-5	R192	(B)A
C109	(B)A-6	C217	(B)G-2	C424	(A)C-9	C577	(A)D-1	C764	(A)E-8	L106	(A)B-5	Q124	(A)B-3	R106	(A)B-5	R193	(B)A
C110	(B)A-6	C218	(A)D-3	C425	(B)B-9	C578	(B)D-1	C765	(A)E-8	L107	(A)B-6	Q125	(A)B-3	R107	(B)B-5	R194	(A)A
C111	(A)A-4	C219	(B)F-4	C426	(B)A-9	C602	(A)F-3	C772	(A)E-8	L108	(A)B-5	Q126	(A)C-3	R108	(B)B-5	R196	(B)A
C112	(A)A-4	C220	(B)E-5	C427	(B)A-9	C603	(A)F-3			L109	(A)B-5	Q129	(B)A-3	R109	(B)B-5	R197	(B)B
C113	(B)A-4	C221	(B)D-4	C428	(A)A-9	C604	(A)G-2	CN060	(B)F-1	L113	(B)B-5	Q130	(B)A-3	R110	(B)B-6	R201	(B)F
C114	(A)A-4	C223	(A)D-4	C429	(B)A-9	C605	(B)F-2	CN101	(B)A-5	L114	(B)B-3	Q131	(B)B-3	R111	(B)B-5	R202	(B)F
C115	(A)A-5	C224	(A)E-5	C430	(B)A-9	C606	(A)F-3	CN102	(A)B-1	L115	(B)B-3	Q202	(B)F-4	R114	(B)B-5	R203	(B)F
C116	(B)A-5	C225	(A)E-5	C431	(A)A-8	C607	(A)F-3	CN300	(B)B-8	L116	(A)C-3	Q206	(A)E-4	R115	(B)C-4	R204	(A)E
C117	(A)A-5	C226	(B)D-5	C432	(A)A-9	C608	(A)F-3	CN301	(A)E-10	L118	(A)C-3	Q208	(A)D-2	R116	(A)B-4	R206	(A)D
C118	(A)A-5	C227	(B)D-5	C433	(A)A-9	C609	(A)G-2	CN400	(B)A-6	L119	(A)A-4	Q211	(A)D-5	R117	(B)B-4	R210	(A)E
C119	(B)A-5	C228	(A)E-5	C434	(B)B-8	C610	(A)G-2	CN401	(B)A-7	L120	(B)B-4	Q212	(A)C-3	R120	(A)B-4	R211	(A)E
C120	(B)A-5	C229	(B)D-5	C435	(A)A-9	C611	(B)G-3	CN402	(B)A-9	L121	(A)B-4	Q213	(A)C-4	R121	(A)B-4	R212	(B)F
C121	(B)B-5	C230	(B)D-5	C436	(A)A-8	C612	(B)G-3	CN403	(B)A-3	L202	(B)F-3	Q214	(A)C-4	R122	(A)B-4	R213	(B)F
C122	(B)B-5	C231	(A)E-3	C437	(B)A-7	C613	(B)F-5	CN501	(B)B-1	L203	(B)E-4	Q215	(B)E-5	R123	(A)B-4	R214	(B)G
C123	(B)B-5	C232	(A)E-3	C438	(B)A-7	C614	(B)F-4	CN601	(B)G-3	L205	(A)D-5	Q216	(A)D-2	R125	(A)B-5	R215	(B)G
C124	(A)B-5	C233	(A)D-2	C439	(B)A-7	C615	(B)F-4	CN701	(B)F-5	L207	(A)E-5	Q217	(A)D-2	R126	(A)B-4	R216	(B)G
C125	(A)B-5	C234	(A)D-4	C441	(A)A-7	C616	(A)G-4	CN702	(A)F-9	L210	(B)D-3	Q218	(B)D-2	R127	(A)B-5	R218	(A)E
C127	(B)B-5	C235	(A)D-4	C442	(B)A-10	C618	(B)G-3			L211	(B)D-4	Q219	(A)C-3	R128	(A)B-5	R219	(B)D
C128	(B)B-5	C236	(A)D-4	C443	(B)A-9	C619	(B)G-3	D101	(B)B-4	L212	(A)C-5	Q221	(A)F-5	R129	(A)B-5	R220	(B)D
C129	(B)B-5	C237	(B)D-4	C444	(A)A-7	C620	(A)G-2	D102	(B)B-3	L213	(B)F-3	Q222	(A)D-2	R130	(A)B-5	R221	(A)D
C130	(A)B-5	C238	(B)D-3	C445	(A)A-7	C701	(B)G-5	D103	(A)C-4	L214	(B)D-6	Q223	(B)D-2	R131	(A)B-5	R222	(B)E
C134	(B)B-4	C240	(A)E-3	C446	(A)A-7	C702	(B)G-5	D201	(B)E-5	L215	(B)E-5	Q224	(B)D-2	R132	(A)B-6	R223	(A)F
C135	(A)A-4	C242	(A)C-5	C447	(A)A-6	C703	(B)G-5	D202	(A)F-3	L216	(B)E-3	Q226	(A)F-4	R133	(A)B-6	R225	(B)D
C136	(A)B-4	C243	(B)F-3	C448	(B)A-6	C704	(B)F-5	D203	(A)C-4	L400	(A)D-8	Q227	(B)D-5	R134	(A)B-5	R226	(B)D
C137	(A)B-4	C244	(B)D-4	C449	(B)A-7	C706	(B)F-5	D701	(A)G-6	L401	(A)B-9	Q228	(B)E-1	R141	(B)B-4	R227	(A)C
C138	(A)B-5	C245	(B)E-4	C450	(A)A-6	C707	(B)G-5	D702	(A)G-5	L402	(B)B-10	Q229	(B)E-1	R149	(B)C-4	R228	(A)F
C139	(A)B-5	C246	(A)D-4	C451	(B)A-6	C708	(B)G-5	D703	(A)F-5	L570	(B)E-2	Q400	(B)A-9	R150	(B)B-3	R229	(A)D
C140	(A)B-6	C247	(B)D-2	C452	(A)A-6	C710	(A)F-5	D705	(B)G-8	L601	(B)G-2	Q401	(B)A-9	R152	(B)B-4	R230	(B)D
C141	(A)B-5	C248	(A)C-2	C453	(A)A-6	C711	(A)G-6	D706	(B)G-6	L602	(B)G-4	Q501	(B)A-2	R153	(A)B-3	R232	(B)E
C142	(A)B-5	C249	(A)C-2	C456	(A)B-9	C712	(B)G-6			L603	(A)G-3	Q507	(B)A-2	R154	(A)B-3	R234	(B)E
C143	(A)B-6	C252	(B)D-5	C458	(A)A-6	C713	(A)G-6	IC061	(A)D-6	L701	(A)F-6	Q570	(A)C-1	R155	(A)B-3	R235	(B)D
C148	(B)B-3	C254	(A)F-5	C504	(B)B-2	C714	(A)F-6	IC101	(B)B-5	L703	(A)G-6	Q601	(A)F-3	R156	(B)B-3	R239	(A)E
C149	(B)B-3	C256	(A)D-3	C505	(B)A-2	C715	(B)F-6	IC201	(B)E-4	L704	(A)F-5	Q602	(B)F-2	R157	(B)B-3	R241	(B)E
C150	(B)B-3	C257	(A)F-4	C508	(A)B-3	C717	(A)G-6	IC202	(B)E-3	L706	(A)G-8	Q603	(B)G-3	R158	(B)B-3	R243	(B)D
C152	(A)B-3	C259	(A)D-5	C513	(A)A-3	C718	(B)G-6	IC204	(A)F-4	L707	(A)G-7	Q701	(B)G-5	R159	(B)B-3	R244	(A)D
C153	(B)B-4	C260	(B)D-6	C515	(A)A-3	C719	(A)E-6	IC400	(B)C-8	L708	(A)G-7	Q703	(B)G-10	R160	(A)B-4	R245	(B)D
C154	(B)B-3	C263	(B)D-2	C520	(B)C-2	C720	(B)F-5	IC401	(A)D-9	L709	(A)G-9	Q704	(B)G-10	R161	(A)B-4	R246	(A)D
C155	(B)B-3	C265	(B)D-3	C521	(B)B-2	C722	(A)F-6	IC402	(A)C-9	L710	(B)F-10	Q705	(B)G-9	R162	(A)B-4	R247	(A)D
C156	(B)B-4	C266	(B)D-3	C522	(B)B-3	C724	(B)G-6	IC403	(A)A-7	L712	(A)F-7	Q706	(B)G-9	R163	(A)B-4	R248	(A)D
C157	(B)C-3	C267	(B)E-5	C523	(B)B-2	C725	(A)E-5	IC404	(A)A-9	L714	(A)F-6	Q750	(B)E-9	R164	(A)B-4	R249	(B)D
C160	(B)B-5	C268	(B)E-5	C525	(B)A-2	C726	(A)F-5	IC405	(B)C-9	L715	(A)F-7	Q752	(B)E-8	R165	(B)B-4	R254	(A)C
C162	(B)A-3	C269	(B)E-3	C526	(A)B-1	C727	(B)F-5	IC501	(A)B-2	L716	(A)G-9	Q753	(A)E-8	R166	(A)B-4	R255	(A)C
C163	(B)A-3	C270	(A)E-3	C529	(A)B-2	C728	(B)E-5	IC570	(B)D-2	L751	(A)E-9	Q754	(A)E-8	R167	(A)B-4	R256	(B)D
C164	(A)A-3	C271	(A)E-3	C531	(A)C-1	C729	(B)E-5	IC601	(A)G-3	L752	(A)E-8			R168	(A)B-4	R257	(B)D
C165	(A)A-3	C400	(B)C-8	C532	(B)B-3	C730	(A)G-5	IC602	(A)F-2	L753	(A)E-8	R062	(B)D-6	R169	(A)B-3	R259	(A)D
C166	(A)B-3	C401	(B)C-8	C533	(A)B-3	C731	(A)F-6	IC603	(B)G-4			R063	(A)E-1	R170	(A)A-5	R260	(A)D
C167	(A)B-3	C402	(B)B-9	C534	(B)B-3	C732	(B)E-6	IC604	(A)G-4	Q060	(A)E-1	R077	(A)F-2	R171	(A)A-5	R261	(A)D
C168	(B)A-4	C403	(B)C-8	C535	(B)B-2	C734	(B)G-6	IC701	(A)F-5	Q061	(A)F-2	R078	(A)F-2	R172	(B)A-5	R262	(A)C
C169	(A)B-4	C404	(B)D-8	C537	(B)B-2	C735	(A)G-8	IC702	(B)F-6	Q062	(A)F-1	R079	(A)F-2	R173	(B)A-5	R263	(A)D
C170	(A)C-4	C405	(A)C-9	C540	(B)C-2	C736	(A)G-8	IC703	(B)E-6	Q063	(B)E-2	R080	(A)F-2	R176	(B)C-3	R265	(B)D
C171	(B)C-6	C406	(B)C-9	C543	(A)C-2	C739	(B)G-7	IC704	(B)F-6	Q064	(A)E-2	R081	(B)E-2	R177	(A)C-3	R266	(A)E

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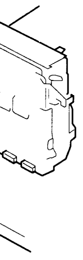

f Fig. a and

beam
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le

4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

VC-167 BOARD

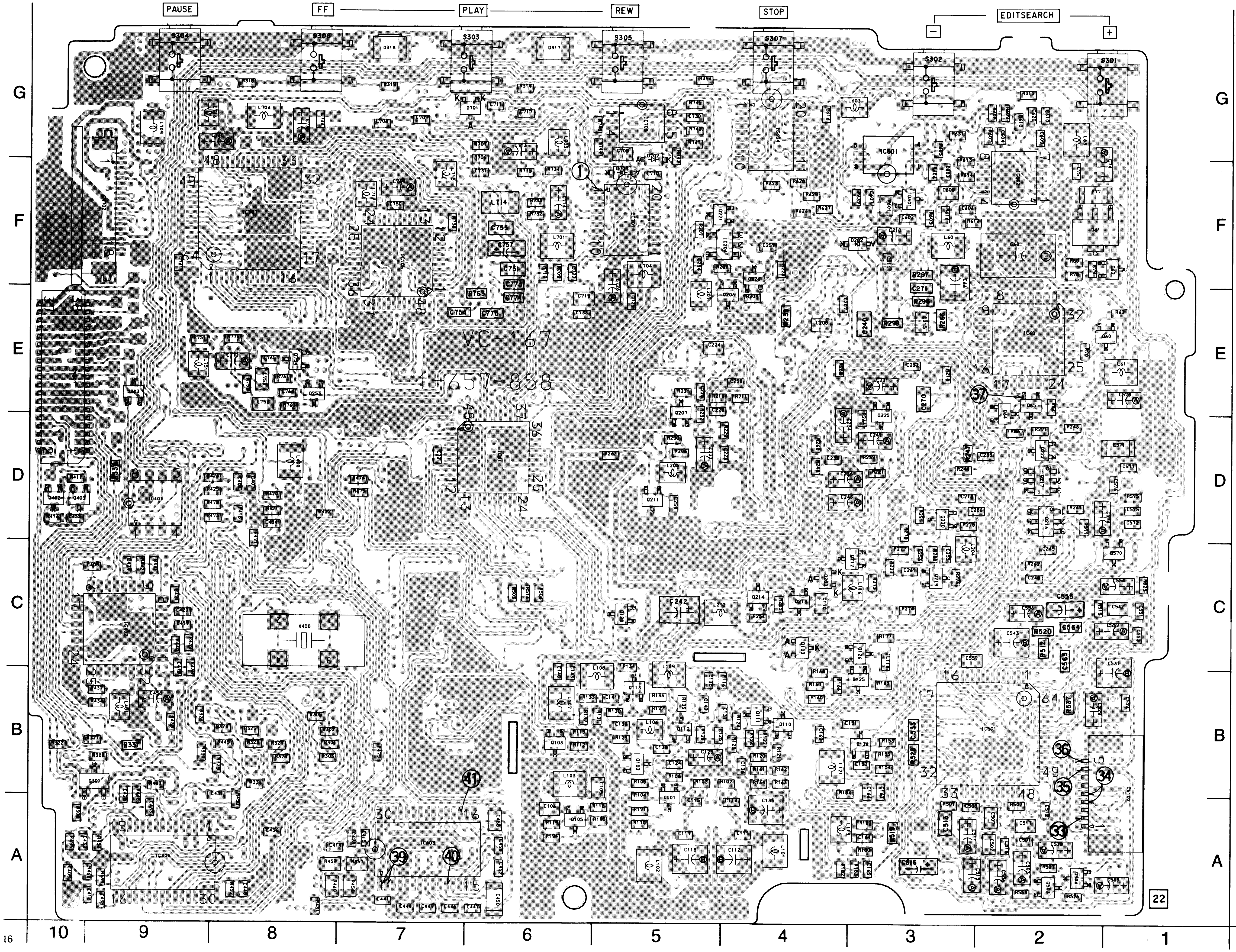
C061	(B)F-2
C069	(B)D-3
C072	(A)D-7
C073	(B)D-6
C075	(A)F-2
C076	(B)E-2
C077	(B)E-2
C078	(B)E-2
C101	(B)A-4
C102	(B)A-5
C103	(B)A-4
C104	(B)A-5
C106	(A)A-6
C107	(B)B-6
C108	(B)A-6
C109	(B)A-6
C110	(B)A-6
C111	(A)A-4
C112	(A)A-4
C113	(B)A-4
C114	(A)A-4
C115	(A)A-5
C116	(B)A-5
C117	(A)A-5
C118	(A)A-5
C119	(B)A-5
C120	(B)A-5
C121	(B)B-5
C122	(B)B-5
C123	(B)B-5
C124	(A)B-5
C125	(A)B-5
C127	(B)B-5
C128	(B)B-5
C129	(B)B-5
C130	(A)B-5
C134	(B)B-4
C135	(A)A-4
C136	(A)B-4
C137	(A)B-4
C138	(A)B-5
C139	(A)B-5
C140	(A)B-6
C141	(A)B-5
C142	(A)B-5
C143	(A)B-6
C148	(B)B-3
C149	(B)B-3
C150	(B)B-3
C152	(A)B-3
C153	(B)B-4
C154	(B)B-3
C155	(B)B-3
C156	(B)B-4
C157	(B)C-3
C160	(B)B-5
C162	(B)A-3
C163	(B)A-3
C164	(A)A-3
C165	(A)A-3
C166	(A)B-3
C167	(A)B-3
C168	(B)A-4
C169	(A)B-4
C170	(A)C-4
C171	(B)C-6
C202	(B)E-3
C203	(B)F-3
C204	(B)E-3
C205	(B)F-3
C206	(B)F-3
C207	(A)E-4
C208	(A)E-4
C209	(B)F-4
C210	(A)F-3
C211	(A)F-3
C212	(B)F-4
C213	(B)F-3
C214	(B)F-3
C215	(A)E-3
C216	(B)G-2
C217	(B)G-2
C218	(A)D-3
C219	(B)F-4
C220	(B)E-5
C221	(B)D-4
C223	(A)D-4
C224	(A)E-5
C225	(A)E-5
C226	(B)D-5
C227	(B)D-5
C228	(A)E-5
C229	(B)D-5
C230	(B)D-5
C231	(A)E-3
C232	(A)E-3
C233	(A)D-2
C234	(A)D-4
C235	(A)D-4
C236	(A)D-4
C237	(B)D-4
C238	(B)D-3
C240	(A)E-3
C242	(A)C-5
C243	(B)F-3
C244	(B)D-4
C245	(B)E-4
C246	(A)D-4
C247	(B)D-2
C248	(A)C-2
C249	(A)C-2
C252	(B)D-5
C254	(A)F-5
C256	(A)D-3
C257	(A)F-4
C259	(A)D-5
C260	(B)D-6
C263	(B)D-2
C265	(B)D-3
C266	(B)D-3
C267	(B)E-5
C268	(B)E-5
C269	(B)E-3
C270	(A)E-3
C271	(A)E-3
C400	(B)C-8
C401	(B)C-8
C402	(B)B-9
C403	(B)C-8
C404	(B)D-8
C405	(A)C-9
C406	(B)C-9
C407	(A)D-8
C408	(A)D-8
C409	(A)A-10
C411	(B)B-9
C412	(B)B-9
C413	(A)A-9
C414	(A)A-8
C415	(A)A-7
C416	(B)D-9
C417	(A)C-9
C418	(A)B-9
C419	(B)C-9
C420	(A)C-9
C421	(A)C-9
C423	(A)A-7
C424	(A)C-9
C425	(B)B-9
C426	(B)A-9
C427	(B)A-9
C428	(A)A-9
C429	(B)A-9
C430	(B)A-9
C431	(A)A-8
C432	(A)A-9
C433	(A)A-9
C434	(B)B-8
C435	(A)A-9
C436	(A)A-8
C437	(B)A-7
C438	(B)A-7
C439	(B)A-7
C441	(A)A-7
C442	(B)A-10
C443	(B)A-9
C444	(A)A-7
C445	(A)A-7
C446	(A)A-7
C447	(A)A-6
C448	(B)A-6
C449	(B)A-7
C450	(A)A-6
C451	(B)A-6
C452	(A)A-6
C453	(A)A-6
C456	(A)B-9
C458	(A)A-6
C504	(B)B-2
C505	(B)A-2
C508	(A)B-3
C513	(A)A-3
C515	(A)A-3
C520	(B)C-2
C521	(B)B-2
C522	(B)B-3
C523	(B)B-2
C525	(B)A-2
C526	(A)B-1
C529	(A)B-2
C531	(A)C-1
C532	(B)B-3
C533	(A)B-3
C534	(B)B-3
C535	(B)B-2
C537	(B)B-2
C540	(B)C-2
C543	(A)C-2
C546	(B)C-1
C548	(A)C-2
C550	(B)A-2
C554	(A)C-1
C555	(A)C-2
C556	(A)C-2
C557	(A)C-3
C558	(B)C-2
C561	(B)A-2
C571	(A)D-1
C572	(A)D-1
C573	(A)E-1
C574	(A)D-1
C575	(A)D-1
C576	(A)D-1
C577	(A)D-1
C578	(B)D-1
C602	(A)F-3
C603	(A)F-3
C604	(A)G-2
C605	(B)F-2
C606	(A)F-3
C607	(A)F-3
C608	(A)F-3
C609	(A)G-2
C610	(A)G-2
C611	(B)G-3
C612	(B)G-3
C613	(B)F-5
C614	(B)F-4
C615	(B)F-4
C616	(A)G-4
C618	(B)G-3
C619	(B)G-3
C620	(A)G-2
C701	(B)G-5
C702	(B)G-5
C703	(B)G-5
C704	(B)F-5
C706	(B)F-5
C707	(B)G-5
C708	(B)G-5
C710	(A)F-5
C711	(A)G-6
C712	(B)G-6
C713	(A)G-6
C714	(A)F-6
C715	(B)F-6
C717	(A)G-6
C718	(B)G-6
C719	(A)E-6
C720	(B)F-5
C722	(A)F-6
C724	(B)G-6
C725	(A)E-5
C726	(A)F-5
C727	(B)F-5
C728	(B)E-5
C729	(B)E-5
C730	(A)G-5
C731	(A)F-6
C732	(B)E-6
C734	(B)G-6
C735	(A)G-8
C736	(A)G-8
C739	(B)G-7
C740	(B)G-8
C741	(B)G-9
C742	(B)G-9
C745	(B)E-8
C746	(B)F-9
C749	(A)F-7
C750	(A)F-7
C751	(A)F-6
C754	(A)E-7
C755	(A)F-6
C757	(A)F-6
C758	(B)E-6
C759	(B)E-7
C760	(A)G-8
C761	(A)F-9
C764	(A)E-8
C765	(A)E-8
C772	(A)E-8
CN060	(B)F-1
CN101	(B)A-5
CN102	(A)B-1
CN300	(B)B-8
CN301	(A)E-10
CN400	(B)A-6
CN401	(B)A-7
CN402	(B)A-9
CN403	(B)A-3
CN501	(B)B-1
CN601	(B)G-3
CN701	(B)F-5
CN702	(A)F-9
D101	(B)B-4
D102	(B)B-3
D103	(A)C-4
D201	(B)E-5
D202	(A)F-3
D203	(A)C-4
D701	(A)G-6
D702	(A)G-5
D703	(A)F-5
D705	(B)G-8
D706	(B)G-6
IC061	(A)D-6
IC101	(B)B-5
IC201	(B)E-4
IC202	(B)E-3
IC204	(A)F-4
IC400	(B)C-8
IC401	(A)D-9
IC402	(A)C-9
IC403	(A)A-7
IC404	(A)A-9
IC405	(B)C-9
IC501	(A)B-2
IC570	(B)D-2
IC601	(A)G-3
IC602	(A)F-2
IC603	(B)G-4
IC604	(A)G-4
IC701	(A)F-5
IC702	(B)F-6
IC703	(B)E-6
IC704	(B)F-6
IC705	(A)F-7
IC706	(B)F-8
IC707	(A)F-8
IC708	(A)G-5
IC709	(B)G-9
IC710	(B)G-7
L061	(A)E-1
L062	(B)D-6
L063	(A)G-2
L101	(A)A-4
L102	(A)A-5
L103	(A)B-6
L104	(B)B-6
L105	(B)B-5
L106	(A)B-5
L107	(A)B-6
L108	(A)B-5
L109	(A)B-5
L113	(B)B-5
L114	(B)B-3
L115	(B)B-3
L116	(A)C-3
L118	(A)C-3
L119	(A)A-4
L120	(B)B-4
L121	(A)B-4
L202	(B)F-3
L203	(B)E-4
L205	(A)D-5
L207	(A)E-5
L210	(B)D-3
L211	(B)D-4
L212	(A)C-5
L213	(B)F-3
L214	(B)D-6
L215	(B)E-5
L216	(B)E-3
L400	(A)D-8
L401	(A)B-9
L402	(B)B-10
L570	(B)E-2
L601	(B)G-2
L602	(B)G-4
L603	(A)G-3
L701	(A)F-6
L703	(A)G-6
L704	(A)F-5
L706	(A)G-8
L707	(A)G-7
L708	(A)G-7
L709	(A)G-9
L710	(B)F-10
L712	(A)F-7
L714	(A)F-6
L715	(A)F-7
L716	(A)G-9
L751	(A)E-9
L752	(A)E-8
L753	(A)E-8
Q060	(A)E-1
Q061	(A)F-2
Q062	(A)F-1
Q063	(B)E-2
Q064	(A)E-2
Q065	(A)E-2
Q101	(A)A-5
Q102	(A)B-5
Q104	(B)B-6
Q106	(B)A-6
Q107	(B)A-6
Q108	(B)B-4
Q109	(B)B-4
Q110	(A)B-4
Q111	(A)B-4
Q112	(A)B-5
Q113	(A)B-5
Q114	(B)B-6
Q120	(A)C-5
Q123	(B)B-3
Q124	(A)B-3
Q125	(A)B-3
Q126	(A)C-3
Q129	(B)A-3
Q130	(B)A-3
Q131	(B)B-3
Q202	(B)F-4
Q206	(A)E-4
Q208	(A)D-2
Q211	(A)D-5
Q212	(A)C-3
Q213	(A)C-4
Q214	(A)C-4
Q215	(B)E-5
Q216	(A)D-2
Q217	(A)D-2
Q218	(B)D-2
Q219	(A)C-3
Q221	(A)F-5
Q222	(A)D-2
Q223	(B)D-2
Q224	(B)D-2
Q226	(A)F-4
Q227	(B)D-5
Q228	(B)E-1
Q229	(B)E-1
Q400	(B)A-9
Q401	(B)A-9
Q501	(B)A-2
Q507	(B)A-2
Q570	(A)C-1
Q601	(A)F-3
Q602	(B)F-2
Q603	(B)G-3
Q701	(B)G-5
Q703	(B)G-10
Q704	(B)G-10
Q705	(B)G-9
Q706	(B)G-9
Q750	(B)E-9
Q752	(B)E-8
Q753	(A)E-8
Q754	(A)E-8
R062	(B)D-6
R063	(A)E-1
R077	(A)F-2
R078	(A)F-2
R079	(A)F-2
R080	(A)F-2
R081	(B)E-2
R082	(B)E-2
R083	(B)E-2
R084	(A)E-2
R085	(B)E-2
R086	(A)D-2
R087	(B)E-2
R088	(B)E-2
R091	(B)E-2
R092	(B)E-2
R094	(B)E-1
R101	(B)B-6
R102	(A)B-4
R103	(A)B-5
R104	(A)A-5
R105	(A)B-5
R106	(A)B-5
R107	(B)B-5
R108	(B)B-5
R109	(B)B-5
R110	(B)B-6
R111	(B)B-5
R114	(B)B-5
R115	(B)C-4
R116	(A)B-4
R117	(B)B-4
R120	(A)B-4
R121	(A)B-4
R122	(A)B-4
R123	(A)B-4
R125	(A)B-5
R126	(A)B-4
R127	(A)B-5
R128	(A)B-5
R129	(A)B-5
R130	(A)B-5
R131	(A)B-5
R132	(A)B-6
R133	(A)B-6
R134	(A)B-5
R141	(B)B-4
R149	(B)C-4
R150	(B)B-3
R152	(B)B-4
R153	(A)B-3
R154	(A)B-3
R155	(A)B-3
R156	(B)B-3
R157	(B)B-3
R158	(B)B-3
R159	(B)B-3
R160	(A)B-4
R161	(A)B-4
R162	(A)B-4
R163	(A)B-4
R164	(A)B-4
R165	(B)B-4
R166	(A)B-4
R167	(A)B-4
R168	(A)B-4
R169	(A)B-3
R170	(A)A-5
R171	(A)A-5
R172	(B)A-5
R173	(B)A-5
R176	(B)C-3
R177	(A)C-3
R178	(B)A-3
R179	(B)A-3
R180	(A)A-3
R181	(A)A-3
R182	(A)A-4
R183	(A)A-3
R184	(A)B-4
R185	(B)A-3
R186	(B)A-3
R187	(B)A-3
R188	(B)B-6
R189	(B)B-6
R190	(B)A-6
R191	(B)B-6
R192	(B)A-6
R193	(B)A-6
R194	(A)A-6
R196	(B)A-6
R197	(B)B-3
R201	(B)F-3
R202	(B)F-3
R203	(B)F-3
R204	(A)E-4
R206	(A)D-5
R210	(A)E-5
R211	(A)E-4
R212	(B)F-4
R213	(B)F-4
R214	(B)G-1
R215	(B)G-1
R216	(B)G-2
R218	(A)E-3
R219	(B)D-4
R220	(B)D-4
R221	(A)D-3
R222	(B)E-4
R223	(A)F-4
R225	(B)D-2
R226	(B)D-5
R227	(A)C-3
R228	(A)F-5
R229	(A)D-4
R230	(B)D-4
R232	(B)E-5
R234	(B)E-4
R235	(B)D-4
R239	(A)E-4
R241	(B)E-4
R243	(B)D-3
R244	(A)D-2
R245	(B)D-2
R246	(A)D-2
R247	(A)D-2
R248	(A)D-4
R249	(B)D-3
R254	(A)C-4
R255	(A)C-4
R256	(B)D-2
R257	(B)D-2
R259	(A)D-3
R260	(A)D-4
R261	(A)D-2
R262	(A)C-2
R263	(A)D-5
R265	(B)D-2
R266	(A)E-3
R267	(B)D-4
R268	(B)D-2
R270	(B)D-2
R271	(A)D-2
R272	(B)D-2
R273	(A)C-3
R274	(A)C-3
R276	(A)C-3
R277	(A)C-3
R279	(B)C-3
R281	(B)D-3
R282	(B)D-3
R283	(B)D-3
R284	(B)D-2
R286	(B)D-2
R287	(B)D-3
R289	(B)D-3
R290	(A)D-5
R291	(A)D-3
R292	(B)E-4
R293	(B)E-5
R294	(B)E-3
R295	(B)E-3
R296	(B)E-3
R297	(A)E-3
R298	(A)E-3
R299	(A)E-3
R301	(A)B-8
R302	(A)B-8
R303	(A)B-8
R304	(B)B-8
R305	(A)B-8
R314	(A)G-6
R315	(A)G-2
R316	(A)G-5
R317	(A)G-7
R318	(A)G-8
R319	(B)B-9
R320	(B)B-9
R321	(A)B-9
R327	(A)B-8
R328	(A)B-8
R329	(A)B-8
R330	(A)B-9
R331	(A)B-8
R333	(B)D-9
R335	(B)E-8
R337	(A)B-9
R400	(B)B-7
R401	(B)B-7
R402	(B)B-7
R403	(B)C-7
R404	(B)C-7
R405	(B)C-7
R406	(B)C-7
R407	(B)C-7
R408	(B)B-7
R409	(B)B-7
R410	(B)B-7
R411	(A)D-10
R412	(B)C-7
R413	(B)C-7
R414	(B)C-7
R417	(B)C-8
R418	(A)D-8
R419	(B)C-7
R420	(A)D-8
R421	(A)D-8
R422	(A)D-8
R423	(B)D-9
R424	(B)C-9
R425	(A)D-8
R426	(A)D-8
R427	(B)C-9
R428	(B)C-9
R429	(B)A-9
R430	(B)B-8
R434	(A)B-9
R435	(A)B-9
R436	(B)D-9
R437	(A)B-9
R439	(A)C-9
R440	(A)C-9
R441	(A)C-9
R442	(A)C-9
R443	(B)A-10
R444	(B)A-10
R445	(B)B-10
R446	(B)A-10
R447	(A)B-9
R448	(A)A-9
R449	(A)B-8
R450	(A)A-8
R451	(B)A-8
R452	(A)A-8
R453	(B)A-8
R454	(B)A-8
R455	(A)A-10
R456	(A)A-9
R458	(A)A-7
R459	(A)A-8
R460	(A)A-8
R461	(A)A-8
R462	(B)A-7
R463	(B)A-7
R464	(B)A-7
R465	(B)A-6
R466	(B)C-9
R467	(B)A-9
R468	(A)A-9
R469	(A)A-9
R471	(A)D-8
R472	(A)D-8
R473	(A)D-8
R474	(A)D-7
R475	(A)D-7
R476	(B)C-7
R477	(B)C-7
R478	(B)C-7
R479	(A)B-7
R481	(B)A-9
R482	(B)A-9
R501	(A)A-3
R503	(A)C-6
R505	(A)A-2
R506	(A)C-6
R514	(B)C-2
R515	(A)C-2
R517	(A)C-2
R519	(A)A-3
R520	(A)C-2
R522	(B)A-2
R523	(A)B-3
R525	(A)C-1
R530	(B)A-2
R531	(B)A-1
R534	(B)B-2
R537	(A)B-2
R538	(B)A-2
R556	(B)A-1
R570	(B)C-1
R571	(A)D-2
R575	(A)D-1
R581	(B)D-1
R601	(A)F-3
R603	(A)F-3
R604	(A)F-3
R605	(A)G-3
R606	(B)F-3
R607	(A)G-2
R608	(A)G-2
R609	(A)G-2
R610	(A)G-2
R611	(B)F-2
R612	(A)F-3
R613	(A)F-3
R614	(A)F-3
R615	(B)F-3
R616	(A)F-3
R618	(B)F-2
R619	(B)G-2
R620	(B)G-2
R621	(B)G-2
R623	(A)F-4
R628	(A)F-4
R629	(A)F-4
R630	(B)G-3
R631	(A)G-3
R632	(A)F-3
R701	(B)G-5
R702	(B)G-5
R703	(B)F-5
R704	(B)G-5
R706	(A)G-6
R707	(A)G-6
R708	(B)F-9
R709	(A)F-6
R710	(A)F-6
R713	(B)G-8
R714	(B)G-7
R715	(B)G-9
R717	(B)G-9
R719	(B)E-8
R720	(B)E-8
R721	(B)E-8
R722	(B)F-9
R723	(B)F-9
R724	(B)E-9
R725	(B)E-6
R726	(B)G-7
R727	(B)G-7
R728	(B)G-7
R729	(B)G-6
R730	(B)F-7
R732	(A)F-6
R733	(A)F-6
R734	(A)F-6
R735	(A)F-6
R740	(A)G-5
R741	(A)G-5
R742	(A)G-5
R743	(A)G-5
R744	(A)G-5
R745	(A)G-5
R751	(A)E-9
R756	(B)E-8
R757	(A)E-8
R758	(B)G-9
R759	(B)G-9
R760	(A)E-8
R761	(A)E-8
R775	(A)E-8
S301	(A)G-1
S302	(A)G-3
S303	(A)G-6
S304	(A)G-9
S305	(A)G-5
S306	(A)G-8
S307	(A)G-4
X400	(A)C-8
X701	(B)G-6
X702	(B)G-8

VC-167 (MAIN), CN-98 (TRANSLATION) PRINTED WIRING BOARD

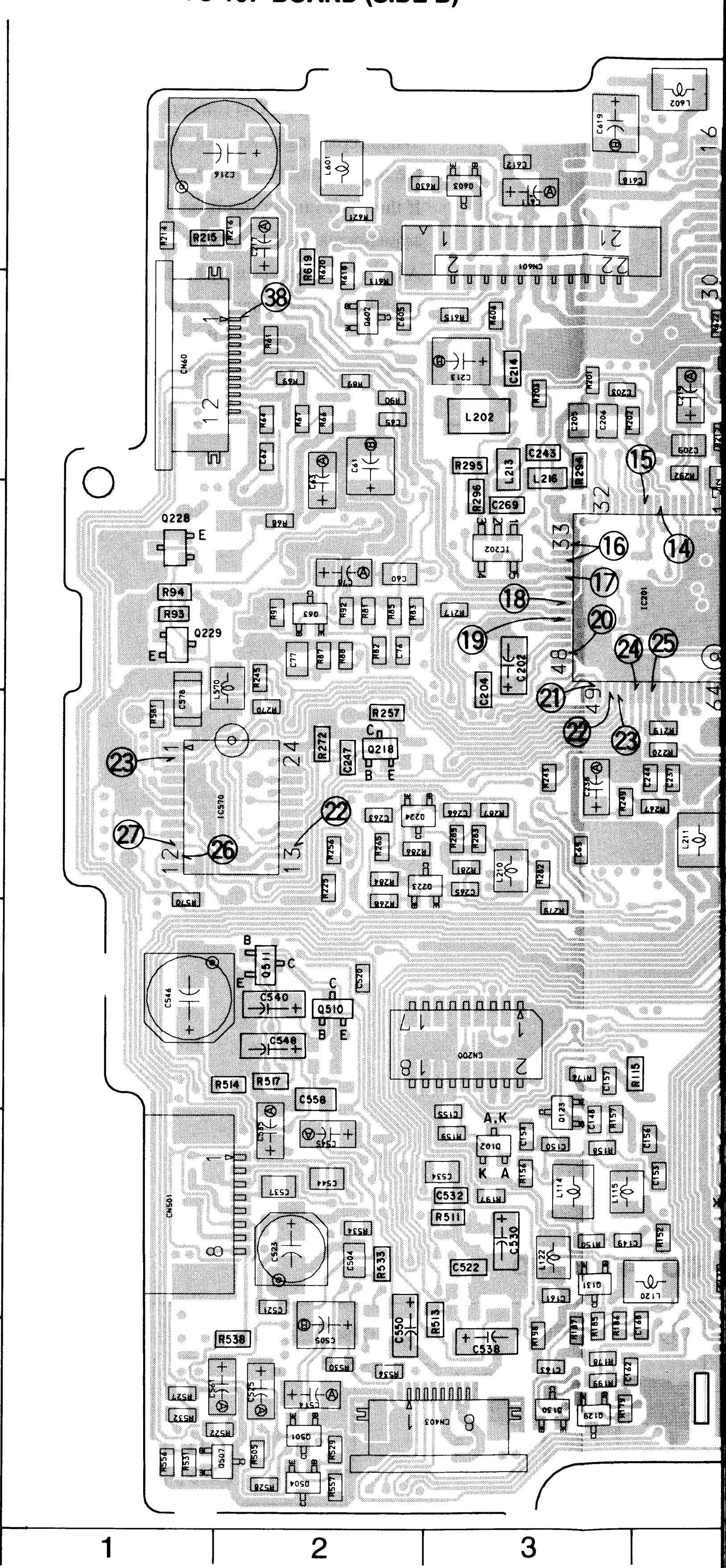
— Ref. No. VC-167 Board; 1,000 Series CN-98 Board; 9000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

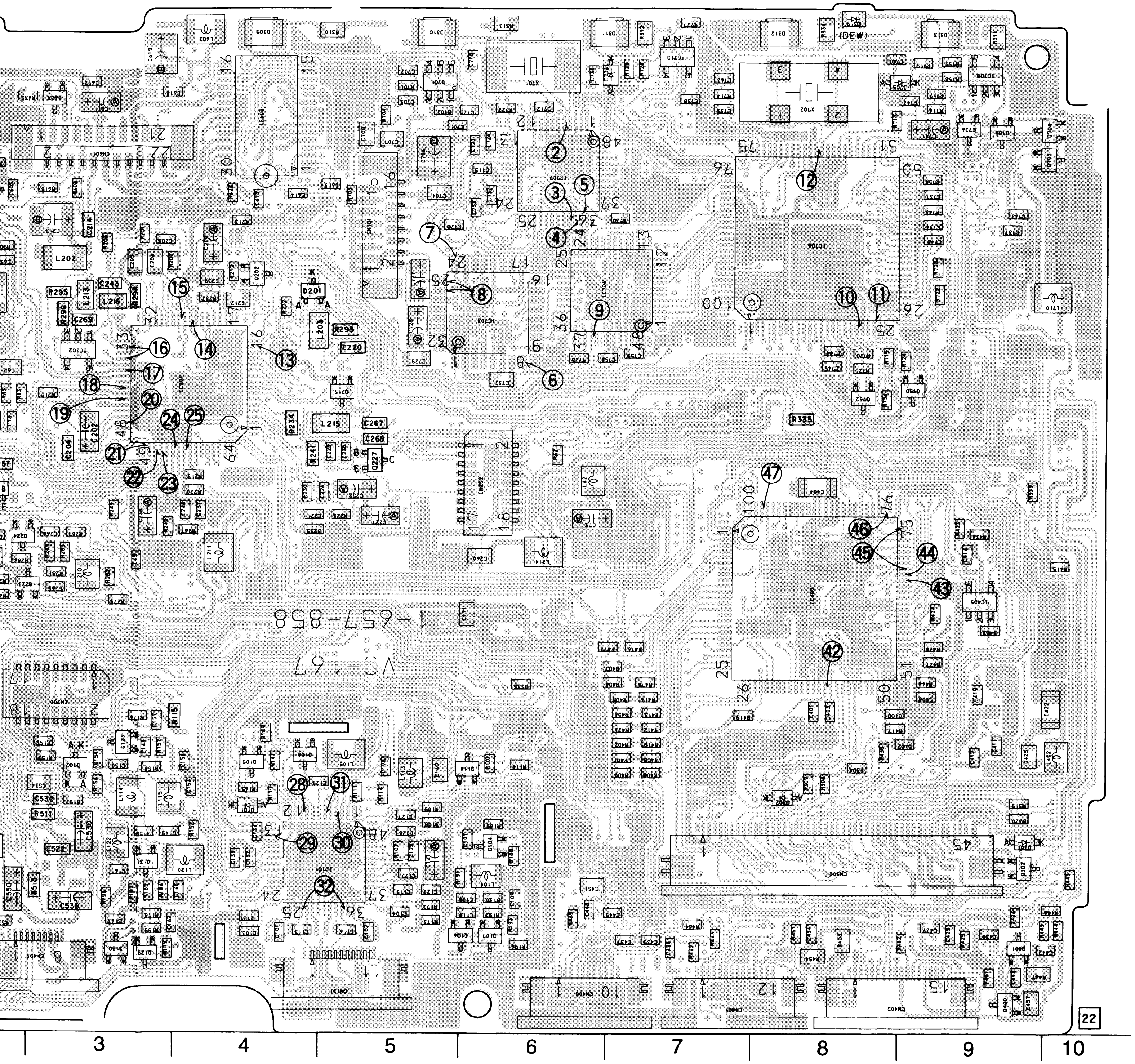
VC-167 BOARD (SIDE A)


PAUSE
FF
PLAY
REW
STOP
EDITSEARCH
−
+
S304
S306
S303
S305
S307
S302
S301
IC701
IC702
IC601
IC401
IC402
IC403
IC404
IC501
IC60
X400
VC-167
1-657-858
CN102
22
G
F
E
D
C
B
A
10
9
8
7
6
5
4
3
2
1

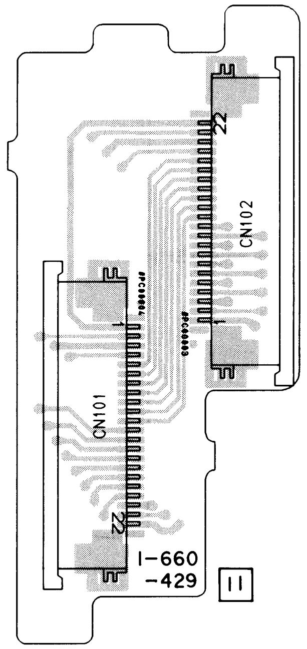
VC-167 BOARD (SIDE B)


CN401
CN501
CN403
IC570
IC201
IC202
Q228
Q229
Q510
G
F
E
D
C
B
A
1
2
3

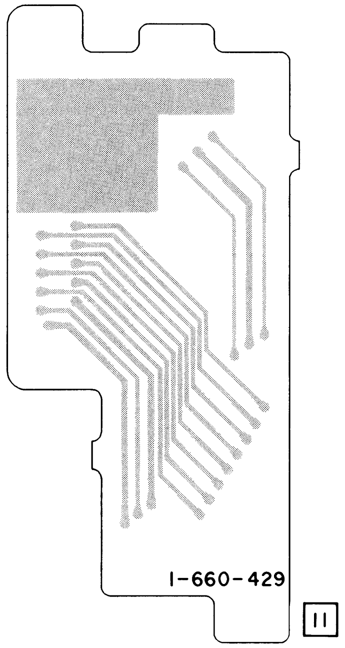
SIDE B)

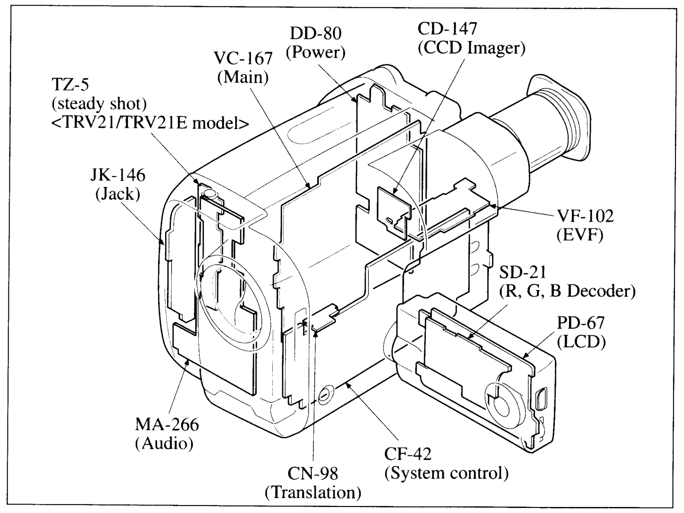

1-657-858
VC-167
IC703
IC704
IC706
IC400
IC201
IC101
CN300
CN400
CN401
CN402
CN101
CN403
X701
X702
(DEW)
22
3
4
5
6
7
8
9
10

CN-98 BOARD (SIDE A)


CN101
CN102
1-660
-429
11

CN-98 BOARD (SIDE B)

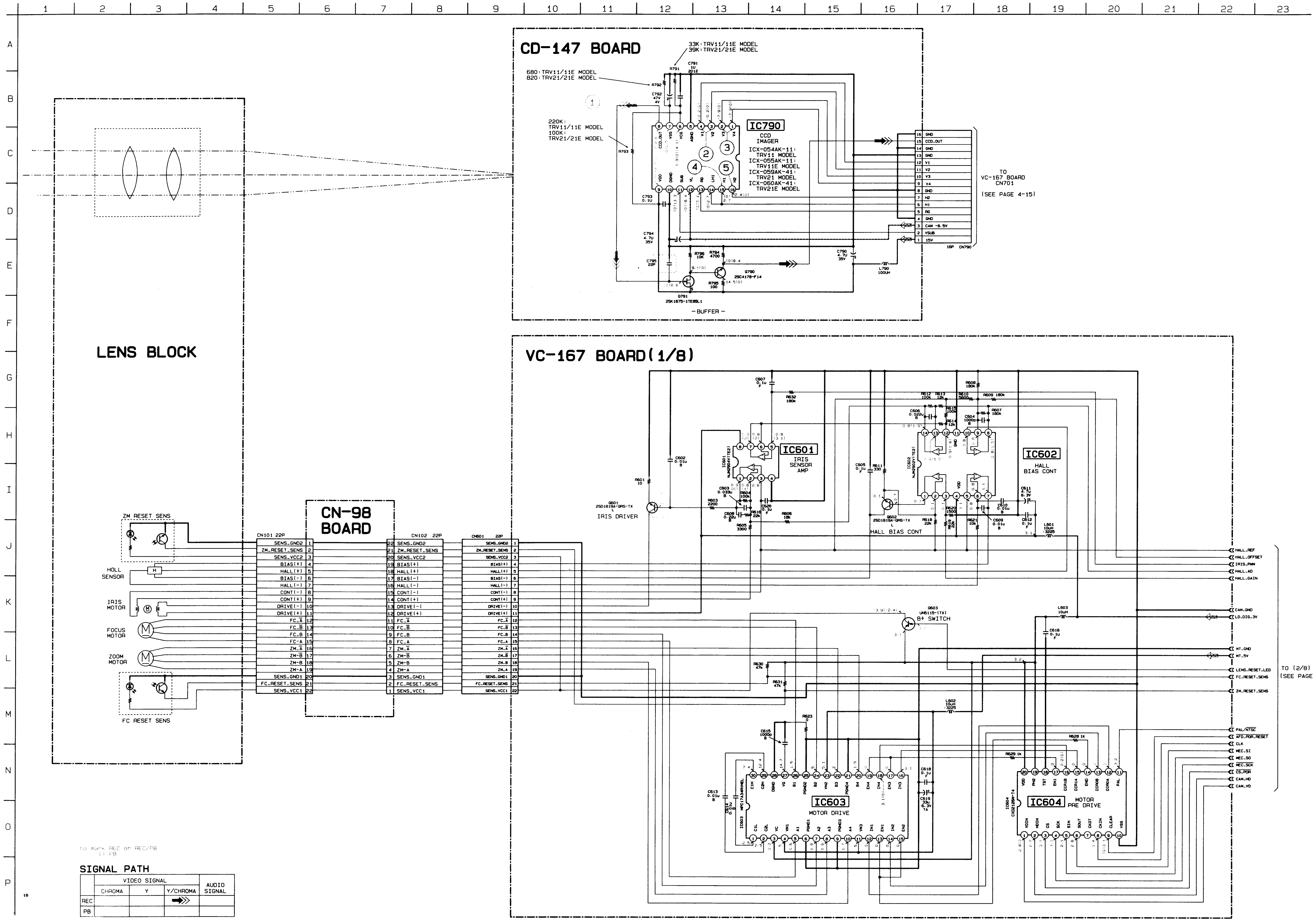



DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

VC-167 (CAMERA 1) , CD-147 (CCD IMAGER), CN-98 (TRANSLATION) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

• See page 4-7 for VC-167 BOARD printed wiring board.

— Ref. No. VC-167 Board; 1,000 Series, CD-147 Board; 2,000 Series, CN-98 Board; 9,000 Series —


CD-147 BOARD
33K:TRV11/11E MODEL
39K:TRV21/21E MODEL
680:TRV11/11E MODEL
820:TRV21/21E MODEL
220K: TRV11/11E MODEL
100K: TRV21/21E MODEL
IC790
CCD IMAGER
ICX-054AK-11: TRV11 MODEL
ICX-055AK-11: TRV11E MODEL
ICX-059AK-41: TRV21 MODEL
ICX-060AK-41: TRV21E MODEL
Q790 2SC4178-F14
Q791 2SK1875-1TE85L1
L790 100uH
-BUFFER-
16 GND
15 CCD.OUT
14 GND
13 GND
12 V1
11 V2
10 V3
9 V4
8 GND
7 H2
6 H1
5 RG
4 GND
3 CAM -8.5V
2 VSUB
1 15V
16P CN790
TO VC-167 BOARD CN701 (SEE PAGE 4-15)
LENS BLOCK
ZM RESET SENS
HOLL SENSOR
IRIS MOTOR
FOCUS MOTOR
ZOOM MOTOR
FC RESET SENS
CN-98 BOARD
CN101 22P
CN102 22P
CN601 22P
SENS.GND2
ZM.RESET.SENS
SENS.VCC2
BIAS(+)
HALL(+)
BIAS(-)
HALL(-)
CONT(-)
CONT(+)
DRIVE(-)
DRIVE(+)
FC.A
FC.B
FC.B
FC-A
ZM.A
ZM-B
ZM-B
ZM-A
SENS.GND1
FC.RESET.SENS
SENS.VCC1
VC-167 BOARD(1/8)
IC601 IRIS SENSOR AMP
IC602 HALL BIAS CONT
Q601 2SD1819A-QRS-TX IRIS DRIVER
Q602 2SD1819A-QRS-TX HALL BIAS CONT
Q603 UN5115-(TX) B+ SWITCH
IC603 MOTOR DRIVE
IC604 MOTOR PRE DRIVE
HALL.REF
HALL.OFFSET
IRIS.PWM
HALL.AD
HALL.GAIN
CAM.GND
LD.DIG.3V
MT.GND
MT.5V
LENS.RESET.LED
FC.RESET.SENS
ZM.RESET.SENS
PAL/NTSC
AFD.PGR.RESET
CLK
MEC.SI
MEC.SO
MEC.SCK
CS.PGR
CAM.HD
CAM.VD
TO (2/8) ① (SEE PAGE 4-15)
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB

Precautions

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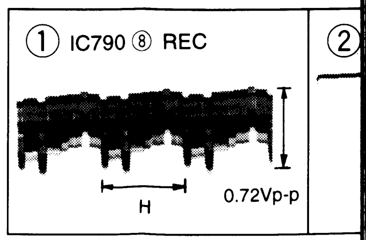
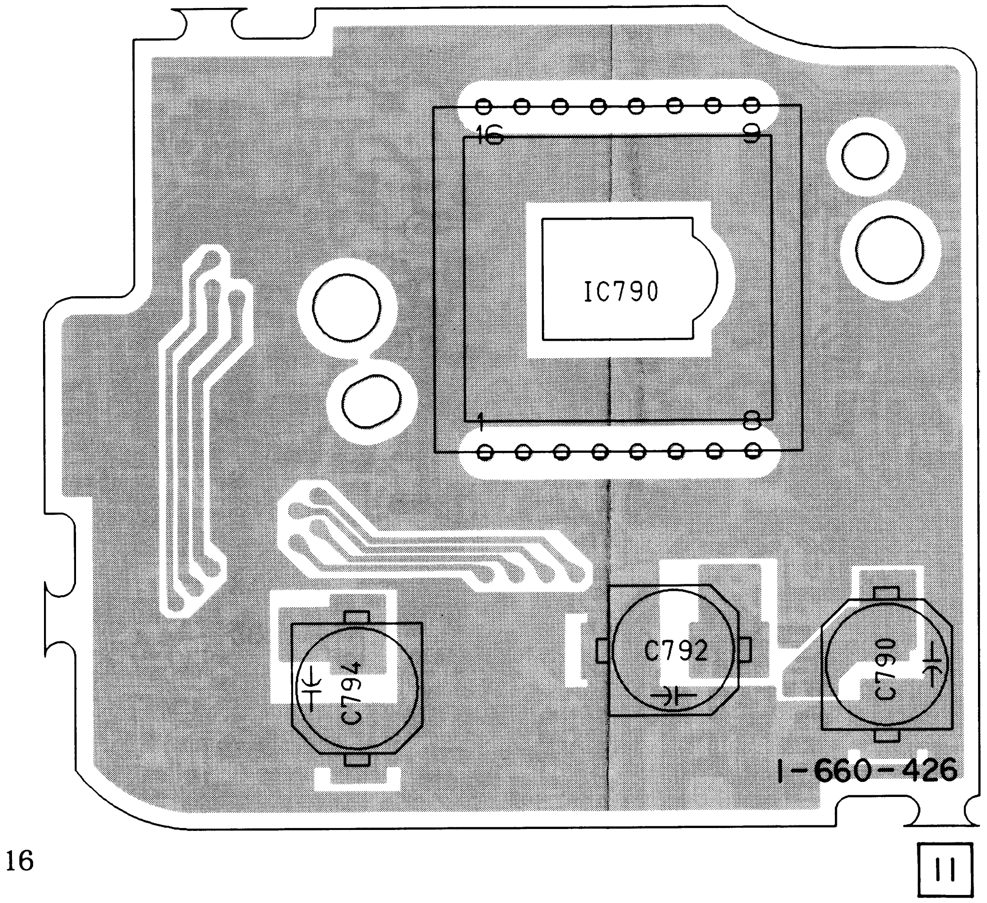
CD-147 BOARD



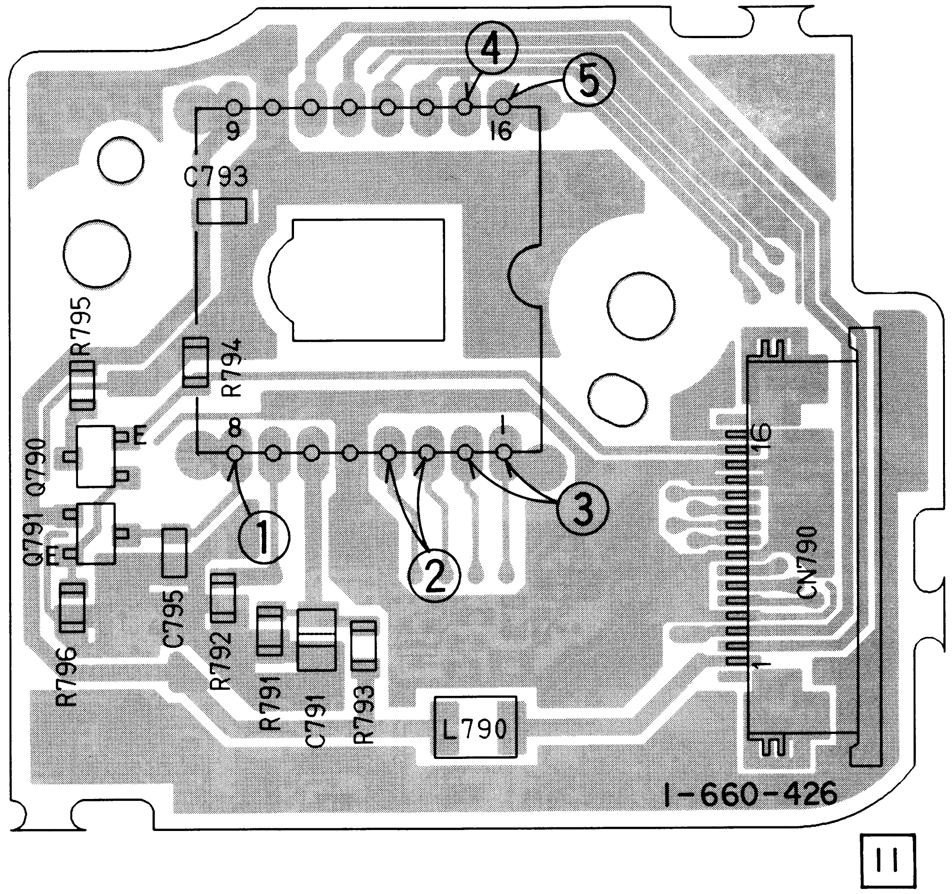
Precautions Upon Replacing CCD Imager

- The CD-147 board mounted as a repair part is not equipped with a CCD imager.
  When replacing this board, remove the CCD imager from the old one and mount it onto the new one.
- If the CCD imager has been replaced, carry out all the adjustments for the camera section.
- As the CCD imager may be damaged by static electricity from its structure, handle it carefully like for the MOS IC.
  In addition, ensure that the receiver is not covered with dusts nor exposed to strong light.

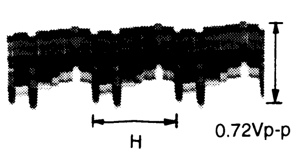
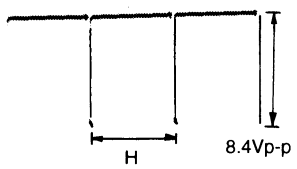
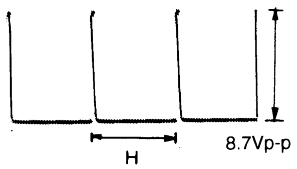
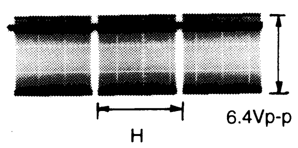
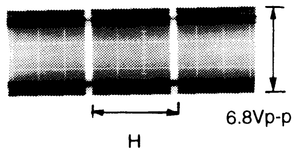
CD-147 BOARD (SIDE A)

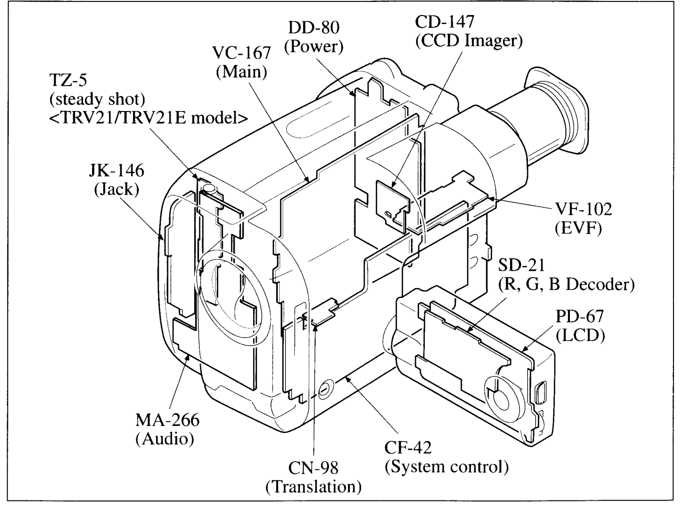

16
9
IC790
1
8
C794
C792
C790
1-660-426
16
11

CD-147 BOARD (SIDE B)


④
⑤
9
16
C793
R795
R794
8
1
E
Q790
Q791
E
①
②
③
16
CN790
C795
R796
R792
R791
C791
R793
L790
1-660-426
11

CD-147 BOARD

① IC790 ⑧ REC  H 0.72Vp-p	② IC790 ③,④ REC  H 8.4Vp-p	③ IC790 ①,② REC  H 8.7Vp-p	④ IC790 ⑮ REC  H 6.4Vp-p	⑤ IC790 ⑯ REC  H 6.8Vp-p

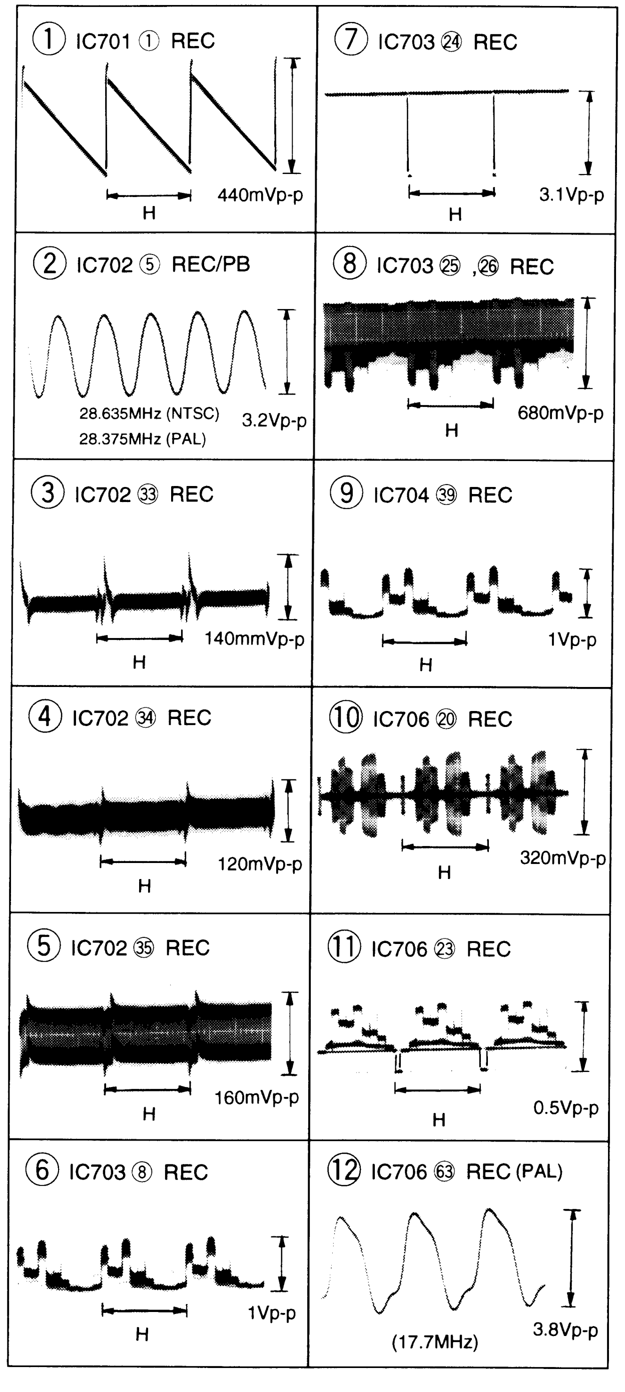

DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

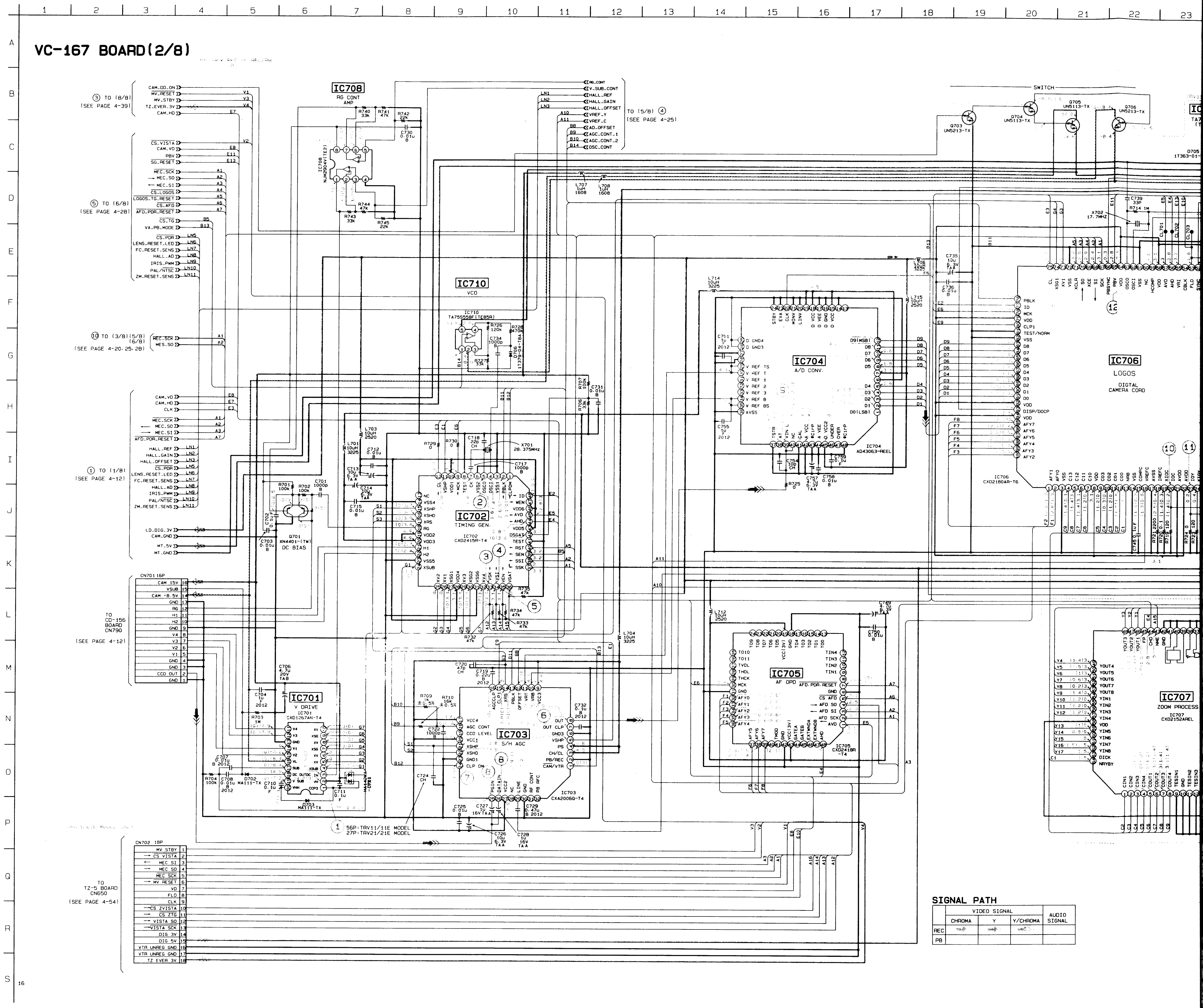
VC-167 (CAMERA 2) SCHEMATIC DIAGRAM

— Ref. No. VC-167 Board; 1,000 Series —

- See page 4-7 for VC-167 BOARD printed wiring board.

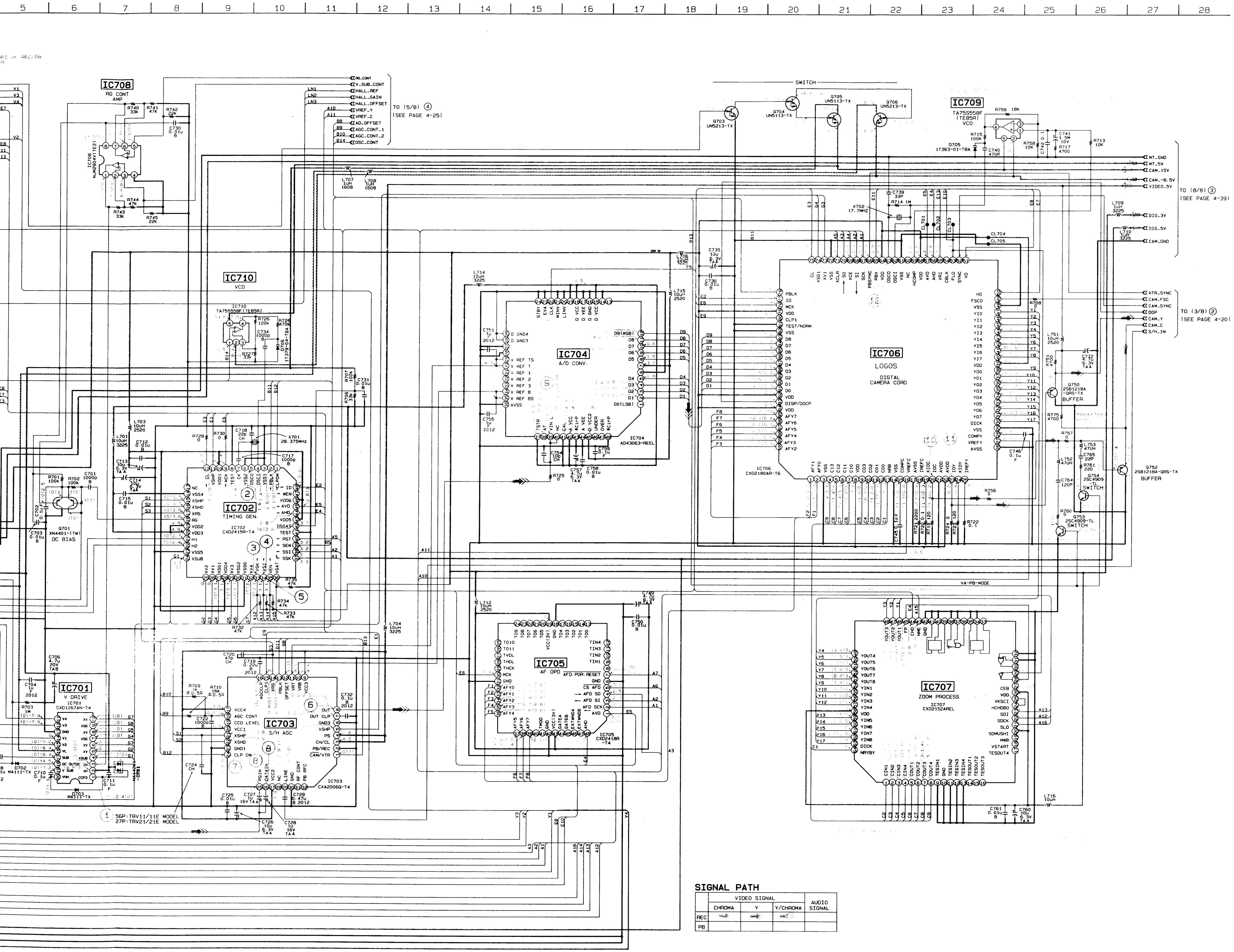
VC-167 BOARD




VC-167 BOARD(2/8)
IC708
RG CONT AMP
IC710
VCO
TA75S558F(TE85R)
IC701
V DRIVE
CXD1267AN-T4
IC702
TIMING GEN.
CXD2415R-T4
IC703
S/H AGC
CXA2006Q-T4
IC704
A/D CONV.
AD43063-REEL
IC705
AF OPD
CXD2418R-T4
IC706
LOGOS
DIGITAL CAMERA CORD
CXD2180AR-T6
IC707
ZOOM PROCESS
CXD2152AR-EL
Q701
XN4401-(TW)
DC BIAS
X701
28.375MHz
X702
17.7MHz
SWITCH
Q703
UN5213-TX
Q704
UN5113-TX
Q705
UN5113-TX
Q706
UN5213-TX
③ TO (8/8) (SEE PAGE 4-39)
⑤ TO (6/8) (SEE PAGE 4-28)
⑲ TO (3/8)(5/8)(6/8) (SEE PAGE 4-20,25,28)
① TO (1/8) (SEE PAGE 4-12)
TO (5/8) ④ (SEE PAGE 4-25)
CN701 16P
TO CD-156 BOARD CN790 (SEE PAGE 4-12)
CN702 18P
TO TZ-5 BOARD CN650 (SEE PAGE 4-54)
1 56P:TRV11/11E MODEL 27P:TRV21/21E MODEL

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				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11
12
13
14
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17
18
19
20
21
22
23
24
25
26
27
28
IC708
RG CONT AMP
IC708 NJM2904V(TE2)
IC710
VCO
IC710 TA75S558F(TE85R)
X701 28.375MHz
IC702
TIMING GEN.
IC702 CXD2415R-T4
Q701 XN4401-(TW) DC BIAS
IC701
V DRIVE
IC701 CXD1267AN-T4
IC703
S/H AGC
IC703 CXA2006Q-T4
IC704
A/D CONV.
IC704 AD43063-REEL
IC705
AF OPD
IC705 CXD2418R-T4
IC706
LOGOS
DIGITAL CAMERA CORD
IC706 CXD2180AR-T6
IC707
ZOOM PROCESS
IC707 CXD2152AREL
IC709
TA75S558F (TE85R)
VCO
X702 17.7MHz
SWITCH
Q703 UN5213-TX
Q704 UN5113-TX
Q705 UN5113-TX
Q706 UN5213-TX
Q750 2SB1218A-QRS-TX BUFFER
Q752 2SB1218A-QRS-TX BUFFER
Q753 2SC4909-TL SWITCH
Q754 2SC4909-TL SWITCH
RG_CONT
V_SUB_CONT
HALL_REF
HALL_GAIN
HALL_OFFSET
VREF_Y
VREF_C
AD_OFFSET
AGC_CONT_1
AGC_CONT_2
OSC_CONT
TO (5/8) ④ (SEE PAGE 4-25)
MT_GND
MT_5V
CAM_15V
CAM_-8.5V
VIDEO_5V
DIG_3V
DIG_5V
CAM_GND
TO (8/8) ③ (SEE PAGE 4-39)
VTR_SYNC
CAM_FSC
CAM_SYNC
DDP
CAM_Y
CAM_C
S/H_IN
TO (3/8) ② (SEE PAGE 4-20)
VA-PB-MODE
56P:TRV11/11E MODEL
27P:TRV21/21E MODEL

SIGNAL PATH

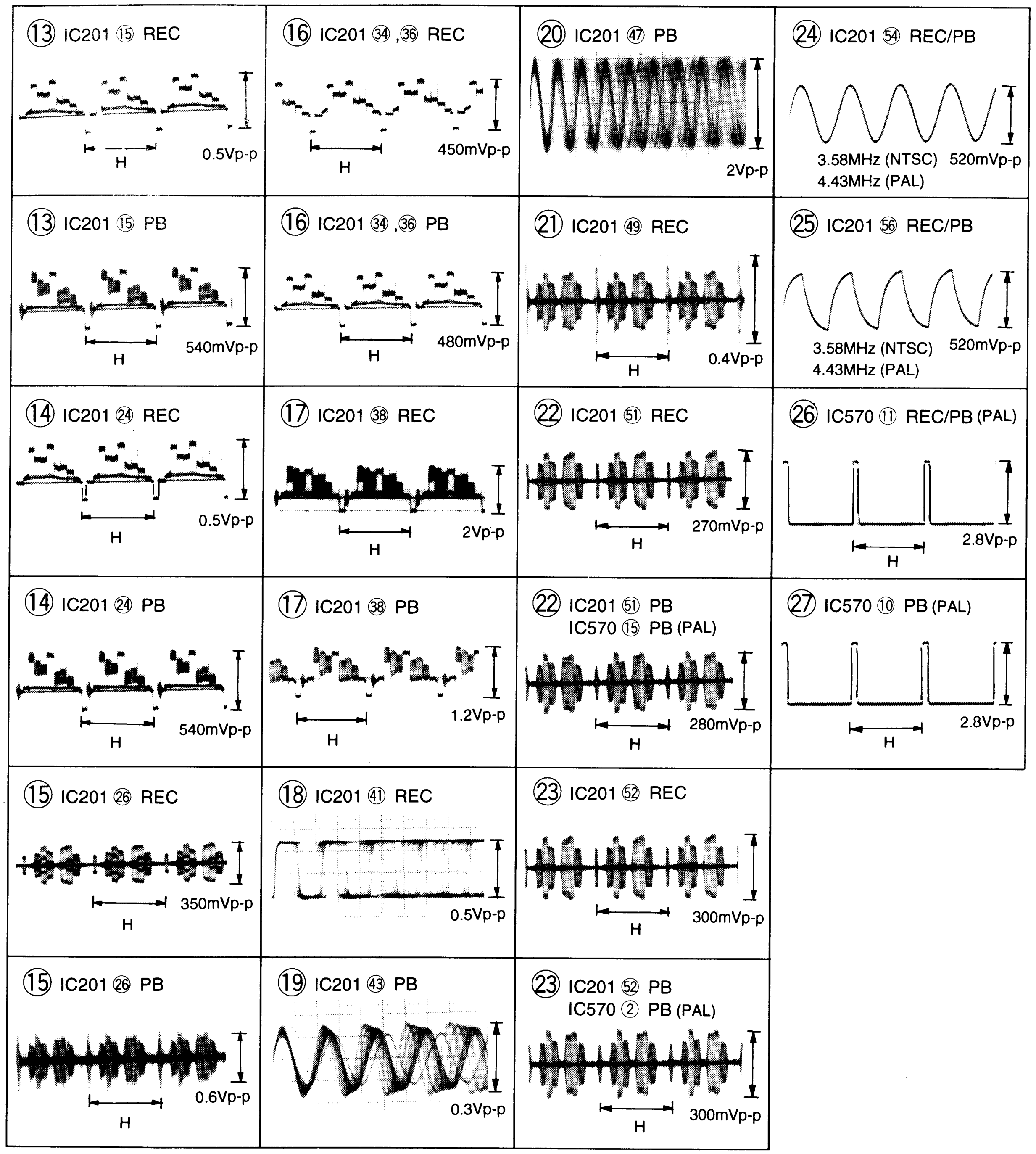
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	→	→	→	
PB				

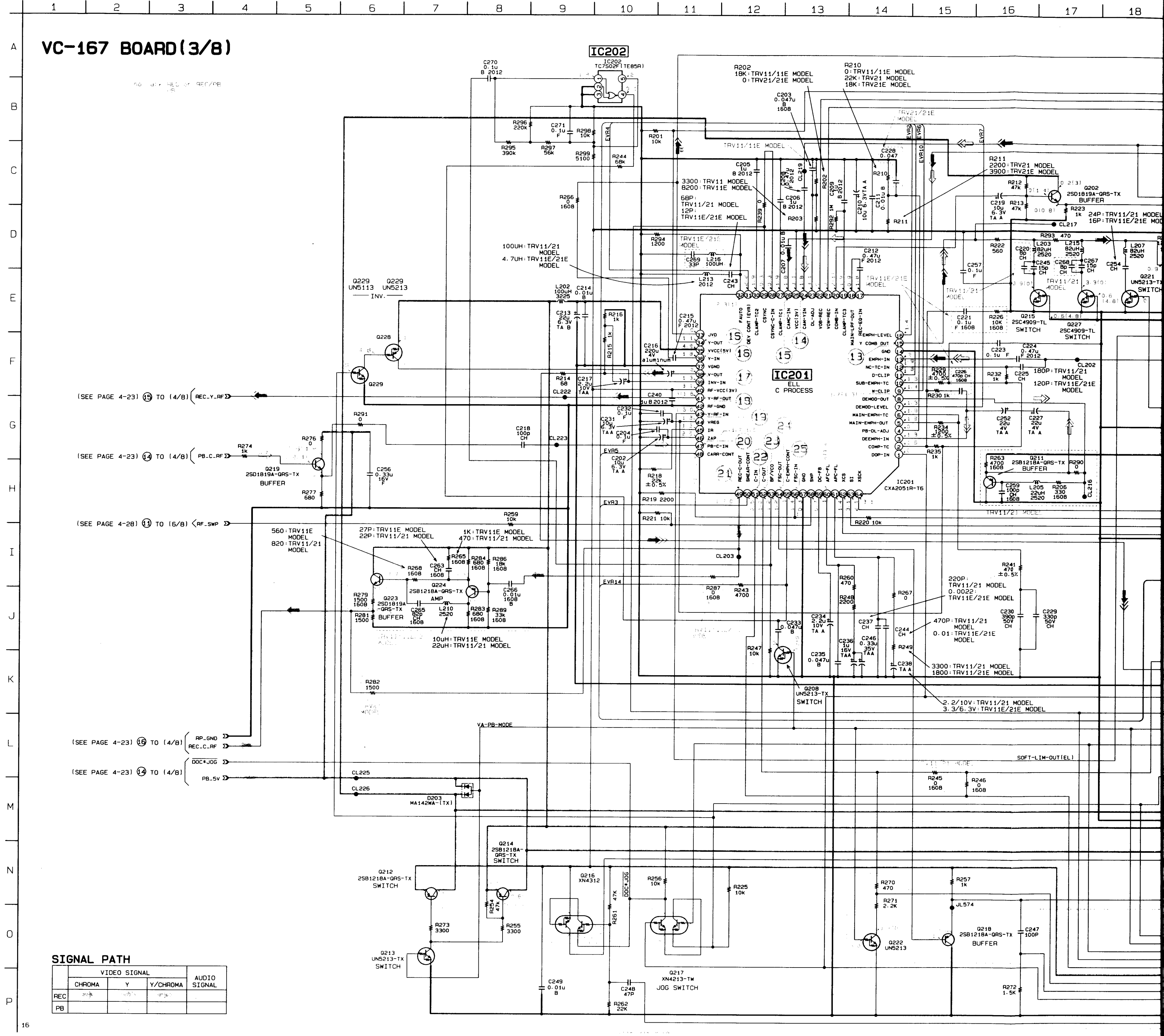
VC-167 (CAMERA 3) SCHEMATIC DIAGRAM

— Ref. No. VC-167 Board; 1,000 Series —

- See page 4-7 for VC-167 BOARD printed wiring board.

VC-167 BOARD



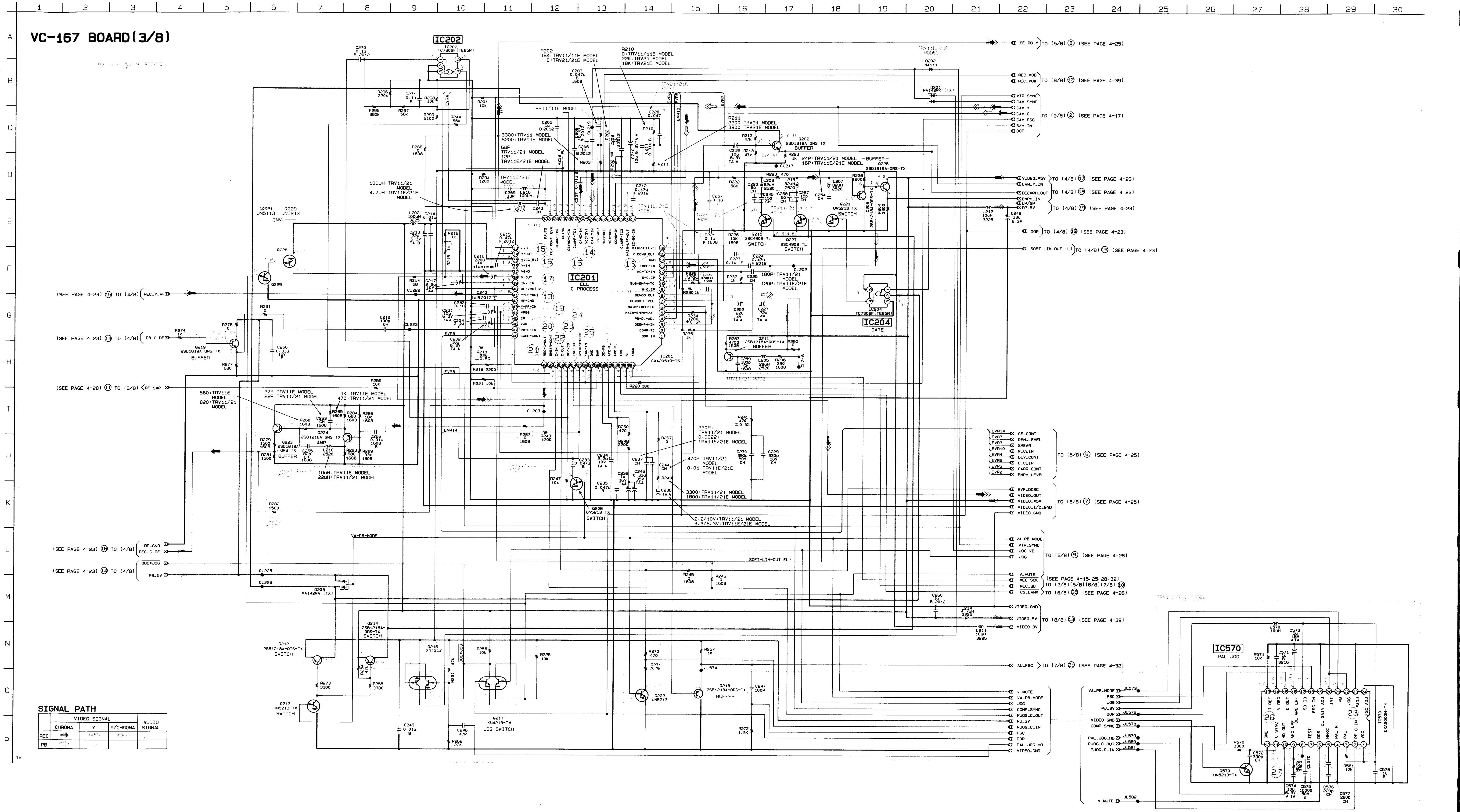

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
A B C D E F G H I J K L M N O P
VC-167 BOARD(3/8)
IC202 TC7S02F(TE85R)
IC201 ELL C PROCESS
IC201 CXA2051R-T6
R202 18K:TRV11/11E MODEL 0:TRV21/21E MODEL
R210 0:TRV11/11E MODEL 22K:TRV21 MODEL 18K:TRV21E MODEL
R211 2200:TRV21 MODEL 3900:TRV21E MODEL
Q202 2SD1819A-QRS-TX BUFFER
24P:TRV11/21 MODEL 16P:TRV11E/21E MODEL
Q221 UN5213-TX SWITCH
Q215 2SC4909-TL SWITCH
Q227 2SC4909-TL SWITCH
180P:TRV11/21 MODEL 120P:TRV11E/21E MODEL
Q211 2SB1218A-QRS-TX BUFFER
Q229 UN5113 Q229 UN5213 INV.
100UH:TRV11/21 MODEL 4.7UH:TRV11E/21E MODEL
3300:TRV11 MODEL 8200:TRV11E MODEL
68P:TRV11/21 MODEL 12P:TRV11E/21E MODEL
(SEE PAGE 4-23) ⑮ TO (4/8) REC_Y_RF
(SEE PAGE 4-23) ⑭ TO (4/8) PB_C_RF
(SEE PAGE 4-28) ⑪ TO (6/8) RF_SWP
Q219 2SD1819A-QRS-TX BUFFER
560:TRV11E MODEL 820:TRV11/21 MODEL
27P:TRV11E MODEL 22P:TRV11/21 MODEL
1K:TRV11E MODEL 470:TRV11/21 MODEL
Q224 2SB1218A-QRS-TX AMP
Q223 2SD1819A-QRS-TX BUFFER
10UH:TRV11E MODEL 22UH:TRV11/21 MODEL
220P:TRV11/21 MODEL 0.0022:TRV11/21E MODEL
470P:TRV11/21 MODEL 0.01:TRV11E/21E MODEL
3300:TRV11/21 MODEL 1800:TRV11/21E MODEL
2.2/10V:TRV11/21 MODEL 3.3/6.3V:TRV11E/21E MODEL
Q208 UN5213-TX SWITCH
(SEE PAGE 4-23) ⑯ TO (4/8) RP_GND REC_C_RF
(SEE PAGE 4-23) ⑭ TO (4/8) DOC*JOG PB_5V
VA-PB-MODE
SOFT-LIM-OUT(EL)
D203 MA142WA-(TX)
Q214 2SB1218A-QRS-TX SWITCH
Q212 2SB1218A-QRS-TX SWITCH
Q216 XN4312
Q217 XN4213-TW JOG SWITCH
Q213 UN5213-TX SWITCH
Q222 UN5213
Q218 2SB1218A-QRS-TX BUFFER
16

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				

oard.

VC-167 BOARD(3/8)



IC202
TC7S02F(TE85R)
IC201
ELL
C PROCESS
CXA2051A-T6
IC204
GATE
TC7S08F(TE85R)
IC570
PAL JOG
CXA2023M-T4
Q202 2SD1819A-QRS-TX BUFFER
Q226 2SD1819A-QRS-TX
Q215 2SC4909-TL SWITCH
Q227 2SC4909-TL SWITCH
Q221 UN5213-TX SWITCH
Q211 2SB1218A-QRS-TX BUFFER
Q229 UN5113 INV
Q219 2SD1819A-QRS-TX BUFFER
Q223 2SD1819A-QRS-TX BUFFER
Q224 2SB1218A-QRS-TX AMP
Q208 UN5213-TX SWITCH
Q214 2SB1218A-QRS-TX SWITCH
Q212 2SB1218A-QRS-TX SWITCH
Q213 UN5213-TX SWITCH
Q216 XN4312
Q217 XN4213-TW JOG SWITCH
Q222 UN5213
Q218 2SB1218A-QRS-TX BUFFER
Q570 UN5213-TX
D202 MA111
D201 MA142WK-(TX)
D203 MA142WA-(TX)
EE_PB_Y TO (5/8) ⑧ (SEE PAGE 4-25)
REC_VOB
REC_VON TO (8/8) ⑫ (SEE PAGE 4-39)
VTR_SYNC
CAM_SYNC
CAM_Y
CAM_C
CAM_FSC
S/H_IN
DOP TO (2/8) ② (SEE PAGE 4-17)
VIDEO_+5V
CAM_Y_IN TO (4/8) ⑰ (SEE PAGE 4-23)
DEEMPH_OUT TO (4/8) ⑱ (SEE PAGE 4-23)
EMPH_IN
LP/SP
AP_5V TO (4/8) ⑲ (SEE PAGE 4-23)
DOP TO (4/8) ⑲ (SEE PAGE 4-23)
SOFT_LIM_OUT_(L) TO (4/8) ⑲ (SEE PAGE 4-23)
CE_CONT
DEM_LEVEL
SMEAR
W_CLIP
DEV_CONT
D_CLIP
CARR_CONT
EMPH_LEVEL TO (5/8) ⑥ (SEE PAGE 4-25)
EVF_DDSC
VIDEO_OUT
VIDEO_+5V
VIDEO_I/O_GND
VIDEO_GND TO (5/8) ⑦ (SEE PAGE 4-25)
VA_PB_MODE
VTR_SYNC
JOG_VD
JOG TO (6/8) ⑨ (SEE PAGE 4-28)
V_MUTE
MEC_SCK
MEC_SO (SEE PAGE 4-15·25·28·32) TO (2/8)(5/8)(6/8)(7/8) ⑩
CS_LARK TO (6/8) ⑩ (SEE PAGE 4-28)
VIDEO_GND
VIDEO_5V
VIDEO_3V TO (8/8) ⑬ (SEE PAGE 4-39)
AU_FSC TO (7/8) ㉑ (SEE PAGE 4-32)
V_MUTE
VA_PB_MODE
JOG
COMP_SYNC
PJOG_C_OUT
PJ_3V
PJOG_C_IN
FSC
DOP
PAL_JOG_HD
VIDEO_GND
(SEE PAGE 4-23) ⑮ TO (4/8) REC_Y_RF
(SEE PAGE 4-23) ⑭ TO (4/8) PB_C_RF
(SEE PAGE 4-28) ⑪ TO (6/8) RF_SWP
(SEE PAGE 4-23) ⑯ TO (4/8) RP_GND REC_C_RF
(SEE PAGE 4-23) ⑭ TO (4/8) DOC+JOG PB_5V
VA_PB_MODE
SOFT_LIM_OUT(EL)

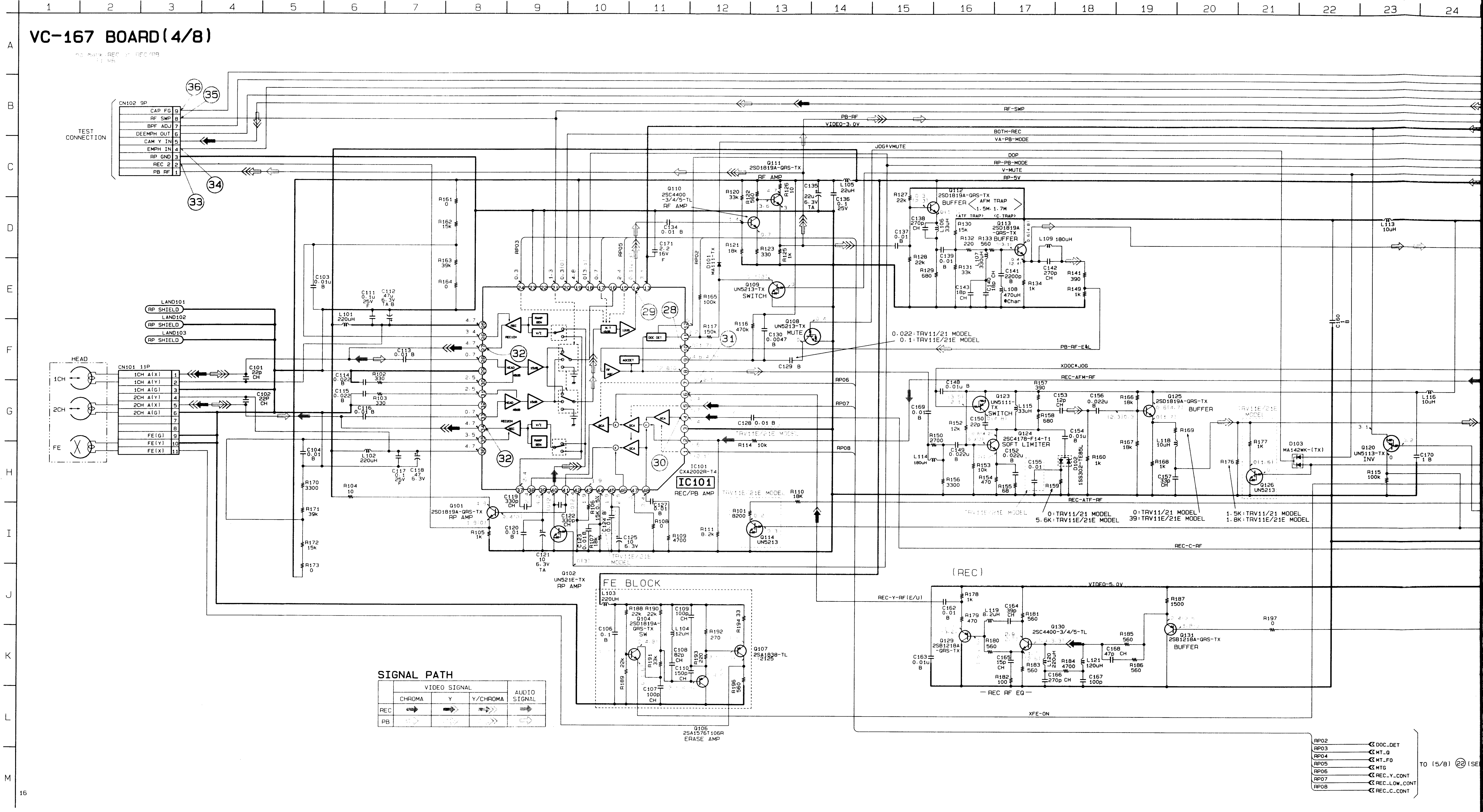
SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				
PB				

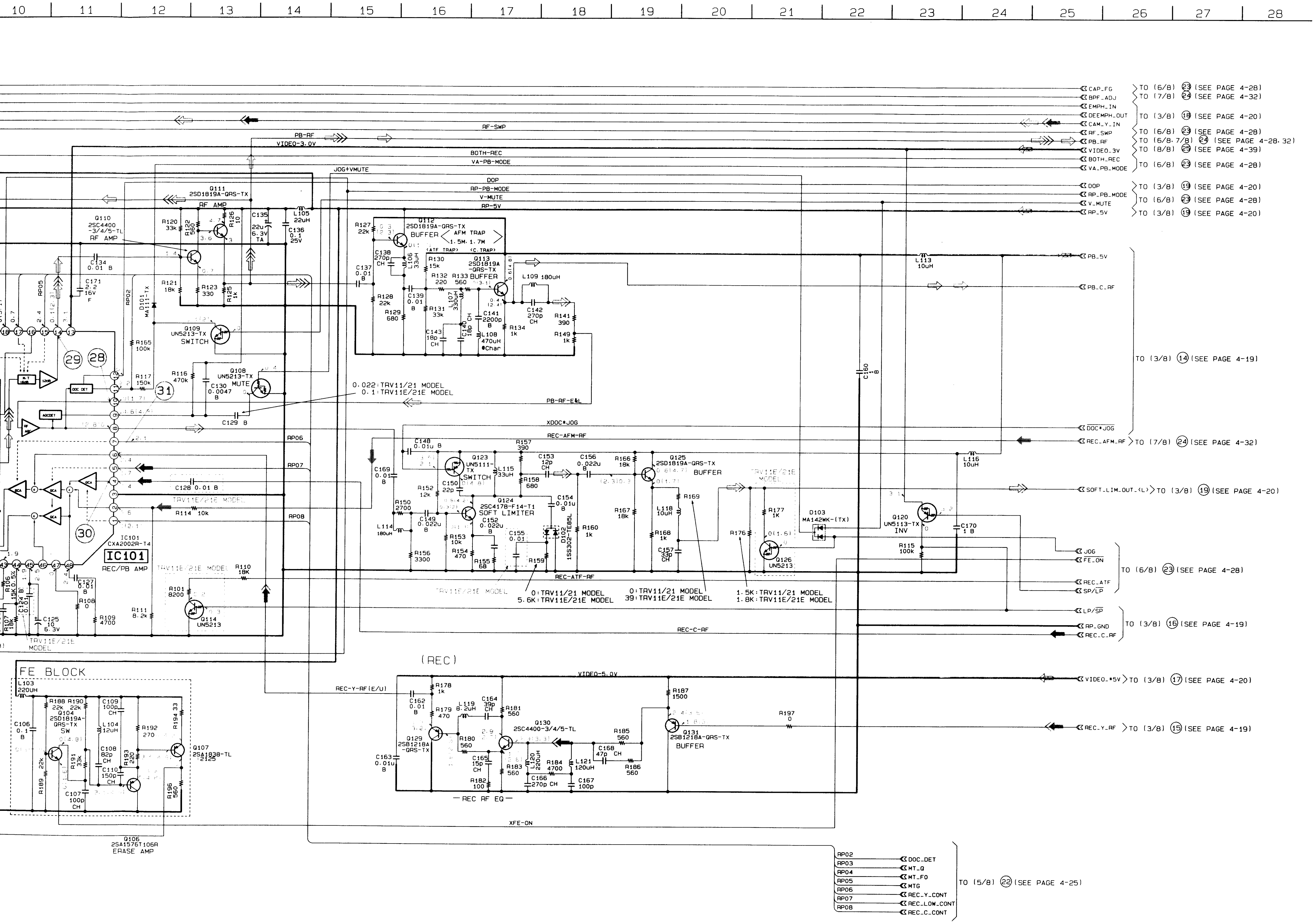
VC-167 (VIDEO 1) SCHEMATIC DIAGRAM

— Ref. No. VC-167 Board; 1,000 Series —

• See page 4-7 for VC-167 BOARD printed wiring board.


VC-167 BOARD(4/8)
CN102 9P
TEST CONNECTION
CAP FG
RF SWP
BPF ADJ
DEEMPH OUT
CAM Y IN
EMPH IN
RP GND
REC 2
PB RF
LAND101
RP SHIELD
LAND102
RP SHIELD
LAND103
RP SHIELD
HEAD
1CH
2CH
FE
CN101 11P
1CH A(X)
1CH A(Y)
1CH A(G)
2CH A(Y)
2CH A(X)
2CH A(G)
FE(G)
FE(Y)
FE(X)
IC101
CXA2002R-T4
REC/PB AMP
Q101
2SD1819A-QRS-TX
RP AMP
Q102
UN521E-TX
RP AMP
Q104
2SD1819A-QRS-TX
SW
Q106
2SA1576T106R
ERASE AMP
Q107
2SA1838-TL
FE BLOCK
Q108
UN5213-TX
MUTE
Q109
UN5213-TX
SWITCH
Q110
2SC4400-3/4/5-TL
RF AMP
Q111
2SD1819A-QRS-TX
RF AMP
Q112
2SD1819A-QRS-TX
BUFFER
AFM TRAP
1.5M-1.7M
Q113
2SD1819A-QRS-TX
BUFFER
Q114
UN5213
Q120
UN5113-TX
INV
Q123
UN5111-TX
SWITCH
Q124
2SC4178-F14-T1
SOFT LIMITER
Q125
2SD1819A-QRS-TX
BUFFER
Q126
UN5213
Q129
2SB1218A-QRS-TX
Q130
2SC4400-3/4/5-TL
Q131
2SB1218A-QRS-TX
BUFFER
D101
MA111-TX
D102
1SS302-TE85L
D103
MA142WK-(TX)
0.022:TRV11/21 MODEL
0.1:TRV11E/21E MODEL
0:TRV11/21 MODEL
5.6K:TRV11E/21E MODEL
0:TRV11/21 MODEL
39:TRV11E/21E MODEL
1.5K:TRV11/21 MODEL
1.8K:TRV11E/21E MODEL
RF-SWP
PB-RF
VIDEO-3.0V
BOTH-REC
VA-PB-MODE
JOG+VMUTE
DOP
RP-PB-MODE
V-MUTE
RP-5V
PB-RF-E&L
XDOC*JOG
REC-AFM-RF
REC-ATF-RF
REC-C-RF
(REC)
VIDEO-5.0V
REC-Y-RF(E/U)
REC RF EQ
XFE-ON
RP02 DOC_DET
RP03 MT_Q
RP04 MT_FO
RP05 MTG
RP06 REC_Y_CONT
RP07 REC_LOW_CONT
RP08 REC_C_CONT
TO (5/8) ㉒
SIGNAL PATH
VIDEO SIGNAL
CHROMA
Y
Y/CHROMA
AUDIO SIGNAL
REC
PB

board.


10
11
12
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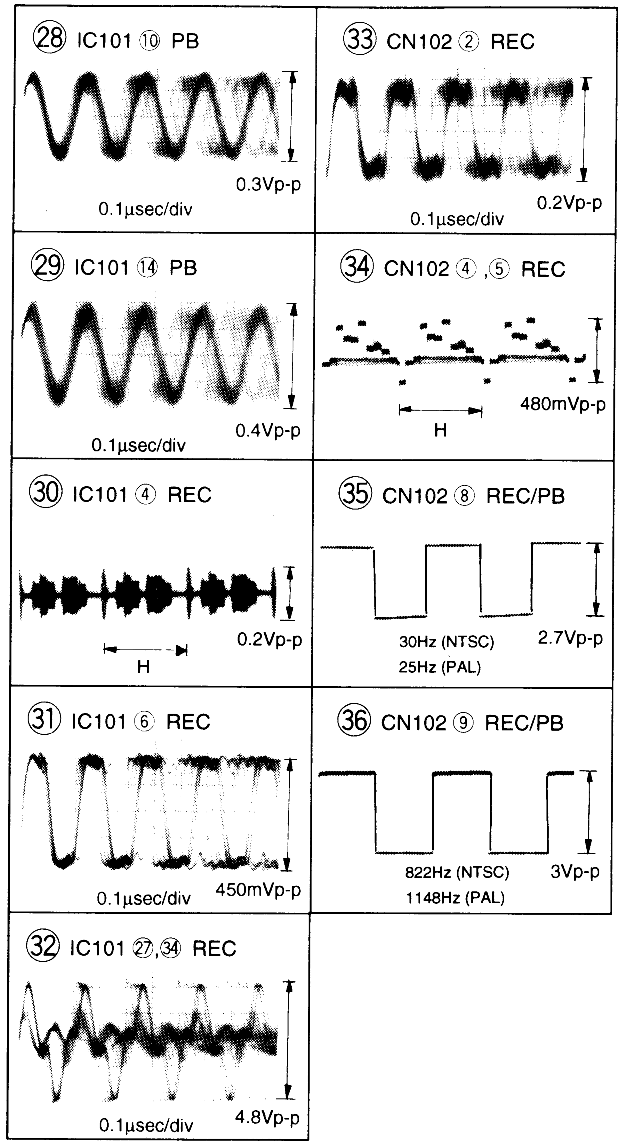
14
15
16
17
18
19
20
21
22
23
24
25
26
27
28
CAP_FG
BPF_ADJ
EMPH_IN
DEEMPH_OUT
CAM_Y_IN
RF_SWP
PB_RF
VIDEO_3V
BOTH_REC
VA_PB_MODE
TO (6/8) ㉓ (SEE PAGE 4-28)
TO (7/8) ㉔ (SEE PAGE 4-32)
TO (3/8) ⑱ (SEE PAGE 4-20)
TO (6/8) ㉓ (SEE PAGE 4-28)
TO (6/8, 7/8) ㉔ (SEE PAGE 4-28, 32)
TO (8/8) ㉙ (SEE PAGE 4-39)
TO (6/8) ㉓ (SEE PAGE 4-28)
DOP
RP_PB_MODE
V_MUTE
RP_5V
TO (3/8) ⑲ (SEE PAGE 4-20)
TO (6/8) ㉓ (SEE PAGE 4-28)
TO (3/8) ⑲ (SEE PAGE 4-20)
RF-SWP
PB-RF
VIDEO-3.0V
BOTH-REC
VA-PB-MODE
JOG+VMUTE
DOP
RP-PB-MODE
V-MUTE
RP-5V
Q111
2SD1819A-QRS-TX
RF AMP
Q110
2SC4400-3/4/5-TL
RF AMP
Q112
2SD1819A-QRS-TX
BUFFER
AFM TRAP
1.5M, 1.7M
(ATF TRAP)
(C.TRAP)
Q113
2SD1819A-QRS-TX
BUFFER
L105 22uH
L106 33uH
L107 330uH
L108 470uH
L109 180uH
L113 10uH
PB_5V
PB_C_RF
TO (3/8) ⑭ (SEE PAGE 4-19)
Q109
UN5213-TX
SWITCH
Q108
UN5213-TX
MUTE
D101
MA111-TX
0.022: TRV11/21 MODEL
0.1: TRV11E/21E MODEL
PB-RF-EAL
XDOC*JOG
REC-AFM-RF
DOC*JOG
REC_AFM_RF
TO (7/8) ㉔ (SEE PAGE 4-32)
Q123
UN5111-TX
SWITCH
Q124
2SC4178-F14-T1
SOFT LIMITER
Q125
2SD1819A-QRS-TX
BUFFER
D102
1SS302-TE85L
TRV11E/21E MODEL
SOFT_LIM_OUT_(L)
TO (3/8) ⑲ (SEE PAGE 4-20)
Q120
UN5113-TX
INV
D103
MA142WK-(TX)
Q126
UN5213
L116 10uH
JOG
FE_ON
REC_ATF
SP/LP
TO (6/8) ㉓ (SEE PAGE 4-28)
LP/SP
RP_GND
REC_C_RF
TO (3/8) ⑯ (SEE PAGE 4-19)
REC-ATF-RF
REC-C-RF
0: TRV11/21 MODEL
5.6K: TRV11E/21E MODEL
0: TRV11/21 MODEL
39: TRV11E/21E MODEL
1.5K: TRV11/21 MODEL
1.8K: TRV11E/21E MODEL
IC101
CXA2002R-T4
REC/PB AMP
Q114
UN5213
RP06
RP07
RP08
TRV11E/21E MODEL
FE BLOCK
Q104
2SD1819A-QRS-TX
SW
Q107
2SA1938-TL
Q106
2SA1576T106R
ERASE AMP
(REC)
VIDEO-5.0V
REC-Y-RF(E/U)
Q129
2SB1218A-QRS-TX
Q130
2SC4400-3/4/5-TL
Q131
2SB1218A-QRS-TX
BUFFER
— REC RF EQ —
VIDEO_*5V
TO (3/8) ⑰ (SEE PAGE 4-20)
REC_Y_RF
TO (3/8) ⑮ (SEE PAGE 4-19)
XFE-ON
RP02
RP03
RP04
RP05
RP06
RP07
RP08
DOC_DET
MT_Q
MT_FO
MTG
REC_Y_CONT
REC_LOW_CONT
REC_C_CONT
TO (5/8) ㉒ (SEE PAGE 4-25)
㉘
㉙
㉚
㉛

VC-167 BOARD

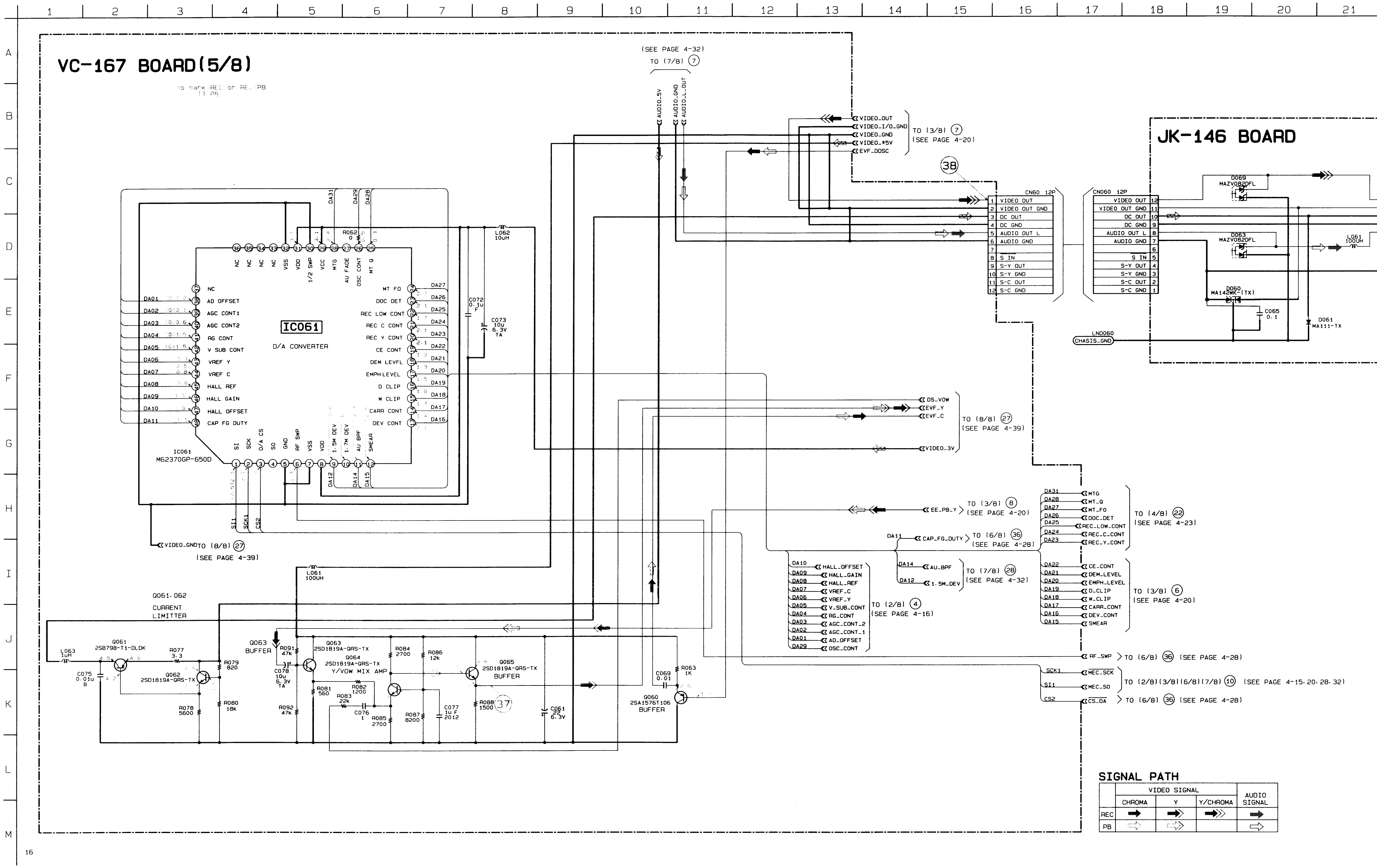


VC-167 (VIDEO 2) , JK-146 (JACK) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

— Ref. No. VC-167 Board; 1,000 Series, JK-146 Board; 2,000 Series —

• See page 4-7 for VC-167 BOARD printed wiring board.

There are

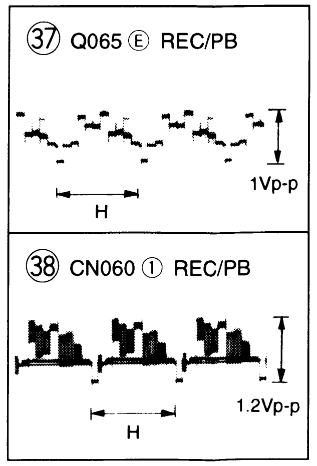

VC-167 BOARD (5/8)
JK-146 BOARD
IC061
D/A CONVERTER
IC061
M62370GP-650D
(SEE PAGE 4-32)
TO (7/8) ⑦
AUDIO_5V
AUDIO_GND
AUDIO_L_OUT
VIDEO_OUT
VIDEO_I/O_GND
VIDEO_GND
VIDEO_*5V
EVF_DOSC
TO (3/8) ⑦
(SEE PAGE 4-20)
㊳
CN60 12P
VIDEO OUT
VIDEO OUT GND
DC OUT
DC GND
AUDIO OUT L
AUDIO GND
S IN
S-Y OUT
S-Y GND
S-C OUT
S-C GND
CN060 12P
D069
MAZV082DFL
D063
MAZV082DFL
D060
MA142WK-(TX)
C065
0.1
D061
MA111-TX
L061
100UH
J060
VIDEO OUT
RFU DC OUT
AUDIO OUT
LND060
CHASIS_GND
L062
10UH
C072
0.1u
F
C073
10u
6.3V
TA
R062
0
DS_VOW
EVF_Y
EVF_C
TO (8/8) ㉗
(SEE PAGE 4-39)
VIDEO_3V
VIDEO_GND TO (8/8) ㉗
(SEE PAGE 4-39)
EE_PB_Y
TO (3/8) ⑧
(SEE PAGE 4-20)
CAP_FG_DUTY
TO (6/8) ㊱
(SEE PAGE 4-28)
AU_BPF
1.5M_DEV
TO (7/8) ㉘
(SEE PAGE 4-32)
HALL_OFFSET
HALL_GAIN
HALL_REF
VREF_C
VREF_Y
V_SUB_CONT
RG_CONT
AGC_CONT_2
AGC_CONT_1
AD_OFFSET
OSC_CONT
TO (2/8) ④
(SEE PAGE 4-16)
MTG
MT_Q
MT_FO
DOC_DET
REC_LOW_CONT
REC_C_CONT
REC_Y_CONT
TO (4/8) ㉒
(SEE PAGE 4-23)
CE_CONT
DEM_LEVEL
EMPH_LEVEL
D_CLIP
W_CLIP
CARR_CONT
DEV_CONT
SMEAR
TO (3/8) ⑥
(SEE PAGE 4-20)
RF_SWP > TO (6/8) ㊱ (SEE PAGE 4-28)
MEC_SCK
MEC_SO
CS_DA
TO (2/8)(3/8)(6/8)(7/8) ⑩ (SEE PAGE 4-15, 20, 28, 32)
TO (6/8) ㊱ (SEE PAGE 4-28)
Q061, 062
CURRENT
LIMITTER
L063
1uH
Q061
2SB798-T1-DLDK
R077
3.3
C075
0.01u
B
Q062
2SD1819A-QRS-TX
R078
5600
R079
820
R080
18k
L061
100UH
Q063
BUFFER
R091
47k
C078
10u
6.3V
TA
R092
47k
Q063
2SD1819A-QRS-TX
Q064
2SD1819A-QRS-TX
Y/VOW MIX AMP
R081
560
R082
1200
R083
22k
C076
1
R085
2700
R084
2700
R086
12k
R087
8200
C077
10 F
2012
Q065
2SD1819A-QRS-TX
BUFFER
R088
1500
㊲
C061
22
6.3V
C069
0.01
R063
1k
Q060
2SA1576T106
BUFFER
SIGNAL PATH

SIGNAL PATH

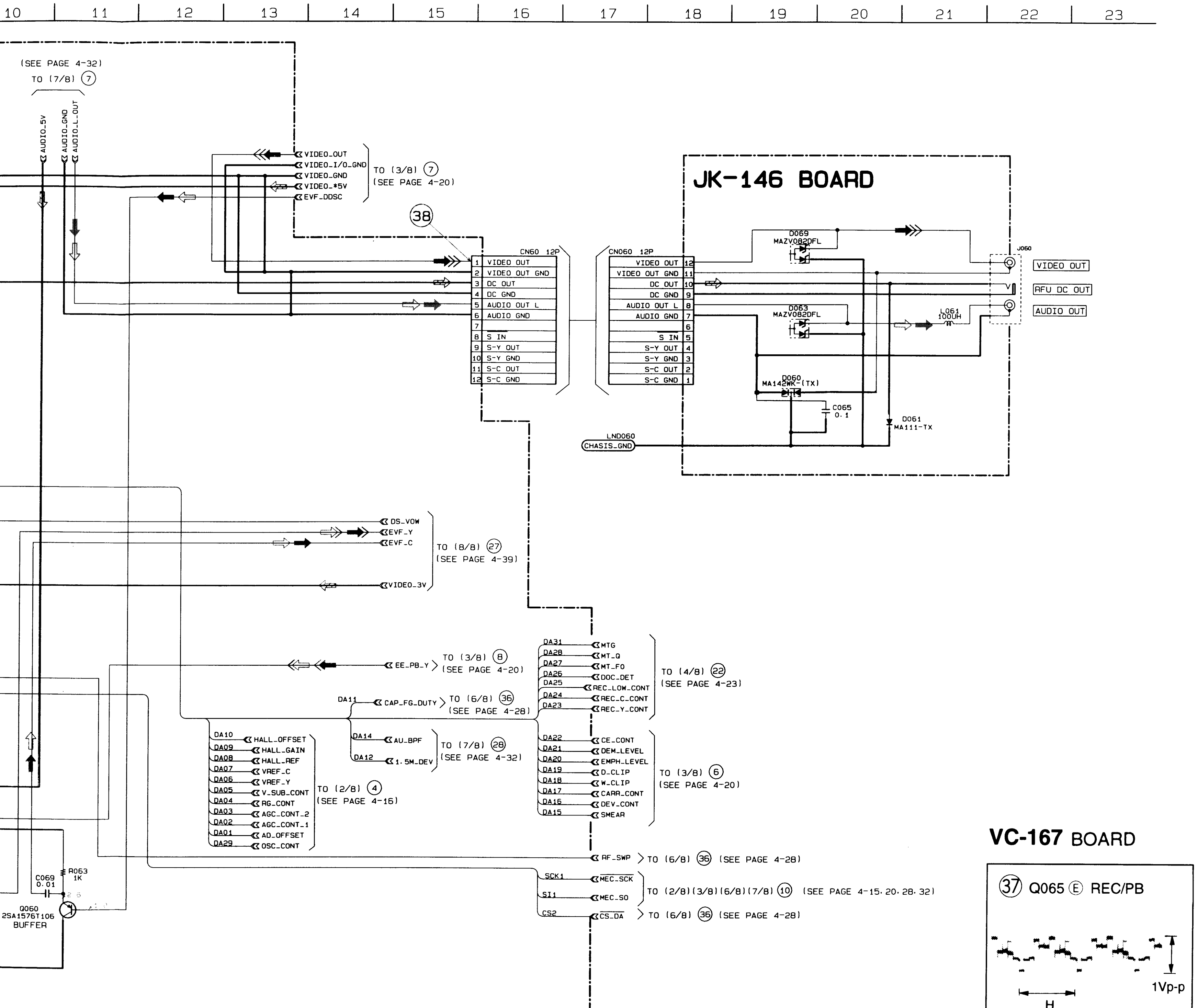
VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	⇛	⇛	➡
PB	⇨	⇨		⇨

JK-146
JK-14
D065
16

VC-167 BOARD



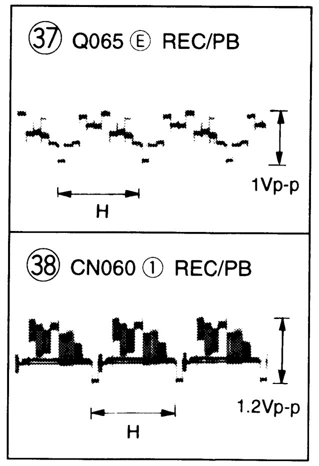
-7 for VC-167 BOARD printed wiring board.


10
11
12
13
14
15
16
17
18
19
20
21
22
23
(SEE PAGE 4-32)
TO (7/8) ⑦
AUDIO_5V
AUDIO_GND
AUDIO_L_OUT
VIDEO_OUT
VIDEO_I/O_GND
VIDEO_GND
VIDEO_*5V
EVF_DDSC
TO (3/8) ⑦
(SEE PAGE 4-20)
㊳
CN60 12P
1 VIDEO OUT
2 VIDEO OUT GND
3 DC OUT
4 DC GND
5 AUDIO OUT L
6 AUDIO GND
7
8 S IN
9 S-Y OUT
10 S-Y GND
11 S-C OUT
12 S-C GND
JK-146 BOARD
CN060 12P
VIDEO OUT 12
VIDEO OUT GND 11
DC OUT 10
DC GND 9
AUDIO OUT L 8
AUDIO GND 7
6
S IN 5
S-Y OUT 4
S-Y GND 3
S-C OUT 2
S-C GND 1
D069
MAZV082DFL
D063
MAZV082DFL
D060
MA142WK-(TX)
C065
0.1
D061
MA111-TX
L061
100UH
J060
VIDEO OUT
RFU DC OUT
AUDIO OUT
LND060
CHASIS_GND
DS_VOW
EVF_Y
EVF_C
VIDEO_3V
TO (8/8) ㉗
(SEE PAGE 4-39)
EE_PB_Y
TO (3/8) ⑧
(SEE PAGE 4-20)
DA11
CAP_FG_DUTY
TO (6/8) ㊱
(SEE PAGE 4-28)
DA10 HALL_OFFSET
DA09 HALL_GAIN
DA08 HALL_REF
DA07 VREF_C
DA06 VREF_Y
DA05 V_SUB_CONT
DA04 RG_CONT
DA03 AGC_CONT_2
DA02 AGC_CONT_1
DA01 AD_OFFSET
DA29 OSC_CONT
TO (2/8) ④
(SEE PAGE 4-16)
DA14 AU_BPF
DA12 1.5M_DEV
TO (7/8) ㉘
(SEE PAGE 4-32)
DA31 MTG
DA28 MT_Q
DA27 MT_FO
DA26 DOC_DET
DA25 REC_LOW_CONT
DA24 REC_C_CONT
DA23 REC_Y_CONT
TO (4/8) ㉒
(SEE PAGE 4-23)
DA22 CE_CONT
DA21 DEM_LEVEL
DA20 EMPH_LEVEL
DA19 D_CLIP
DA18 W_CLIP
DA17 CARR_CONT
DA16 DEV_CONT
DA15 SMEAR
TO (3/8) ⑥
(SEE PAGE 4-20)
RF_SWP
TO (6/8) ㊱ (SEE PAGE 4-28)
SCK1 MEC_SCK
SI1 MEC_SO
TO (2/8)(3/8)(6/8)(7/8) ⑩ (SEE PAGE 4-15, 20, 28, 32)
CS2 CS_DA
TO (6/8) ㊱ (SEE PAGE 4-28)
C069
0.01
R063
1K
Q060
2SA1576T106
BUFFER

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡»	➡»	➡
PB	⇨	⇨»		⇨

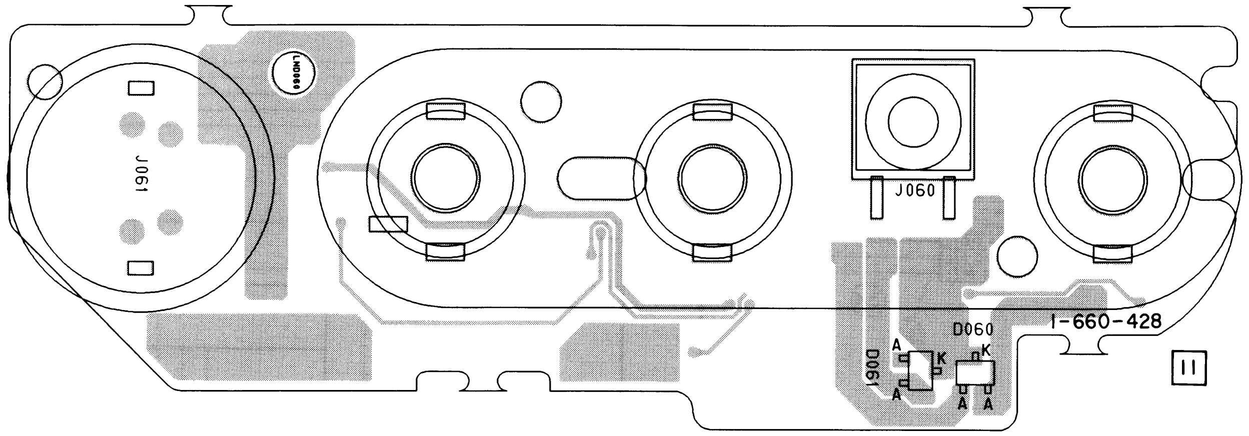
VC-167 BOARD



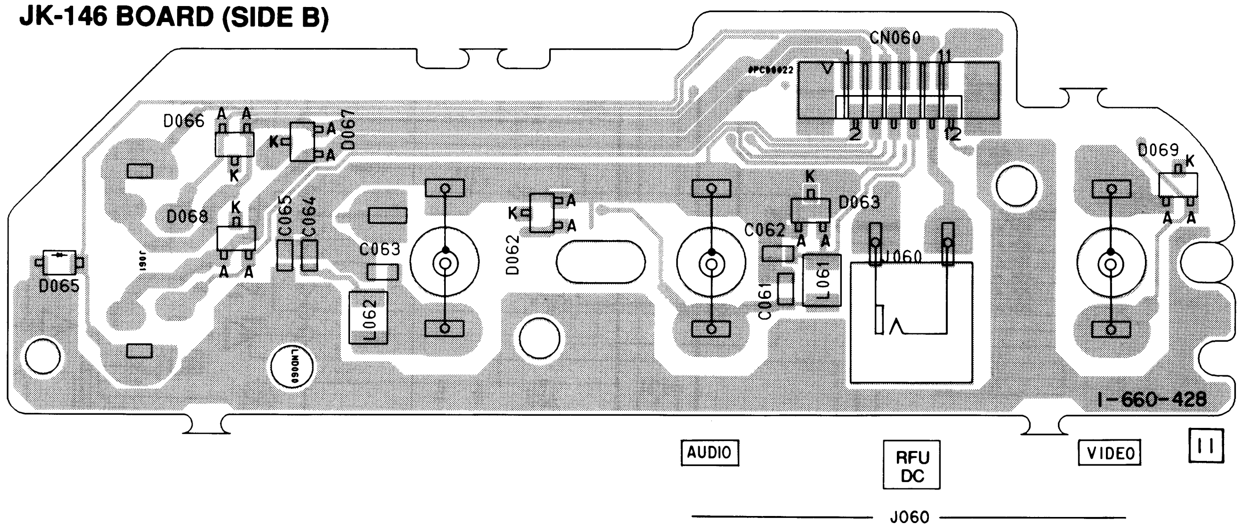
16

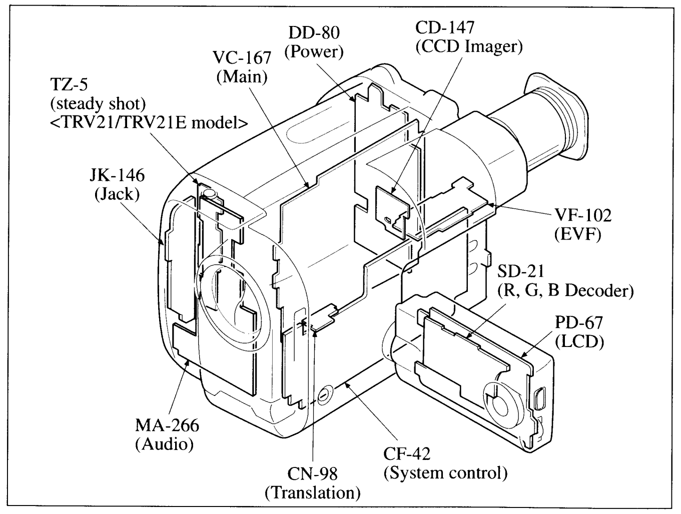
There are few cases that the part printed on this diagram isn't mounted in this model.

JK-146 BOARD (SIDE A)


J061
J060
D060
D061
1-660-428
11

JK-146 BOARD (SIDE B)

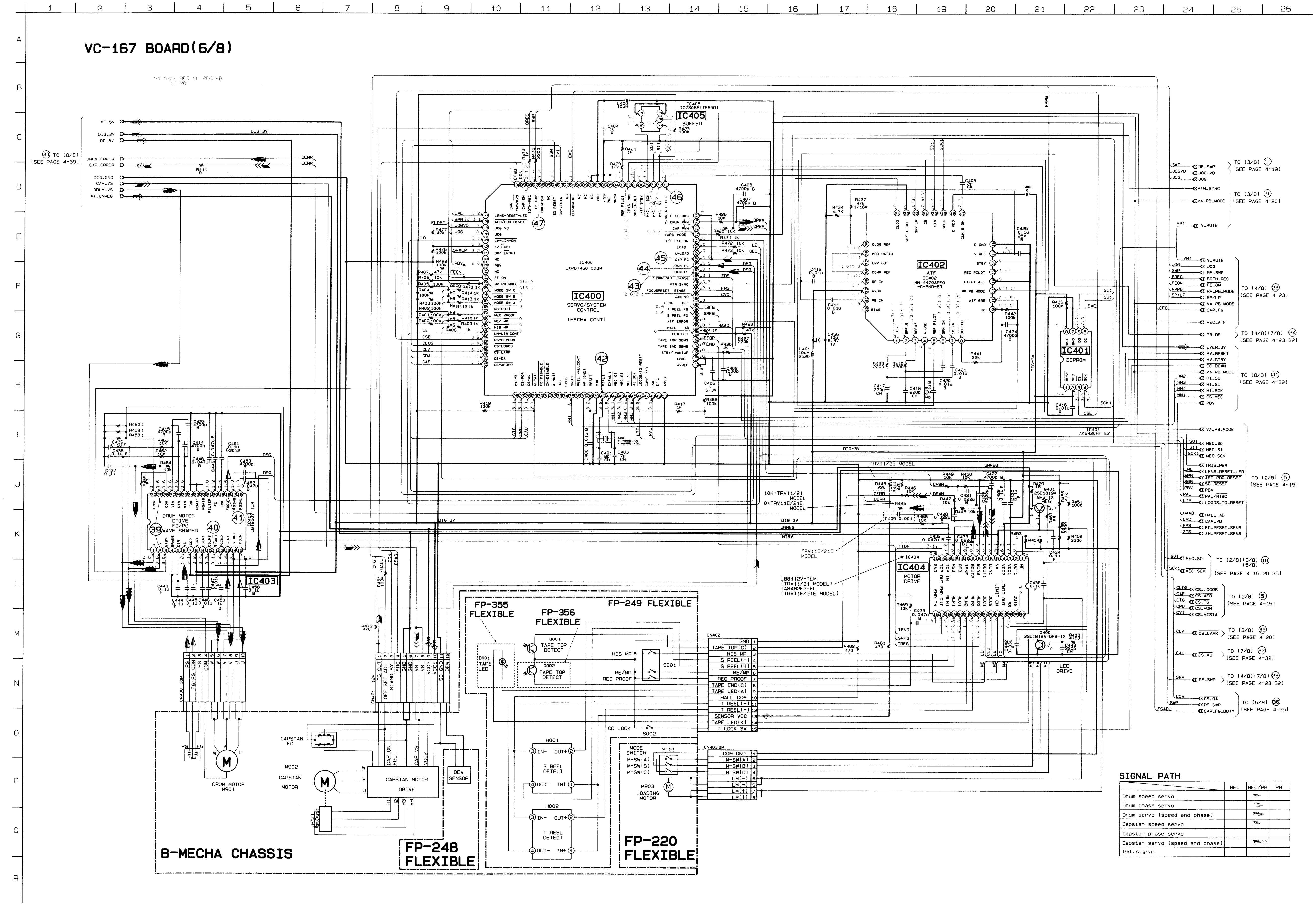

CN060
1
11
2
12
D066
D067
D069
D068
C065
C064
C063
D062
D063
C062
J060
L061
C061
L062
D065
1-660-428
11
AUDIO
RFU DC
VIDEO
J060


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CN-98
(Translation)
CF-42
(System control)

VC-167 (MODE CONTROL), FP-249 (MODE SENSOR) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAMS

• See page 4-7 for VC-167 BOARD printed wiring board.

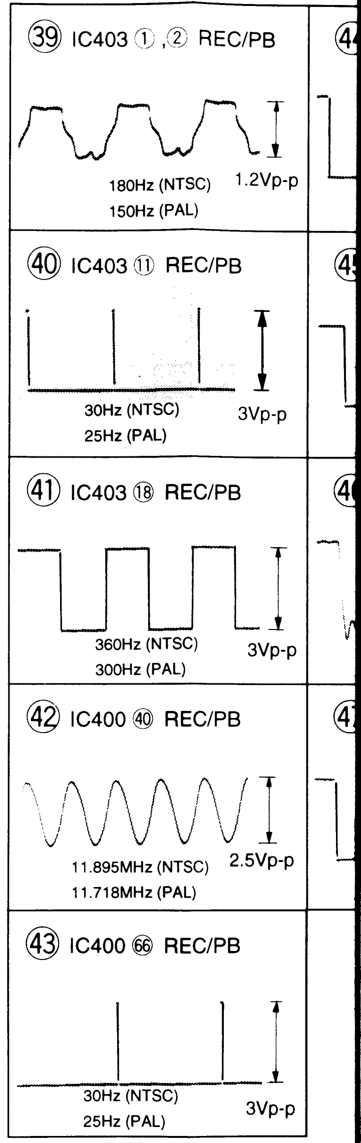
— Ref. No. VC-167 Board; 1,000 Series, FP-249 Board; 5,000 Series —


VC-167 BOARD (6/8)
IC400
CXP87460-008R
IC400
SERVO/SYSTEM CONTROL
(MECHA CONT)
IC402
ATF
IC402
MB-4470APFQ-G-BND-ER
IC401
EEPROM
IC401
AK6420HF-E2
IC405
TC7S08F(TE85R)
IC405
BUFFER
IC403
DRUM MOTOR DRIVE
FG/PG
WAVE SHAPER
IC404
MOTOR DRIVE
LB8112V-TLM (TRV11/21 MODEL)
TA8482F2-EL (TRV11E/21E MODEL)
10K:TRV11/21 MODEL
0:TRV11E/21E MODEL
TRV11/21 MODEL
TRV11E/21E MODEL
Q400
2SD1819A-QRS-TX
Q401
2SD1819A-QRS-TX
REG
LED DRIVE
MT.5V
DIG.3V
DR.5V
DRUM.ERROR
CAP.ERROR
DIG.GND
CAP.VS
DRUM.VS
MT.UNREG
(30) TO (8/8)
(SEE PAGE 4-39)
TO (3/8) (11)
(SEE PAGE 4-19)
TO (3/8) (9)
(SEE PAGE 4-20)
TO (4/8) (23)
(SEE PAGE 4-23)
TO (4/8)(7/8) (24)
(SEE PAGE 4-23, 32)
TO (8/8) (31)
(SEE PAGE 4-39)
TO (2/8) (5)
(SEE PAGE 4-15)
TO (2/8)(3/8) (10)
(5/8)
(SEE PAGE 4-15, 20, 25)
TO (2/8) (5)
(SEE PAGE 4-15)
TO (3/8) (35)
(SEE PAGE 4-20)
TO (7/8) (32)
(SEE PAGE 4-32)
TO (4/8)(7/8) (23)
(SEE PAGE 4-23, 32)
TO (5/8) (36)
(SEE PAGE 4-25)
FP-355 FLEXIBLE
FP-356 FLEXIBLE
FP-249 FLEXIBLE
D001 TAPE LED
Q001 TAPE TOP DETECT
Q002 TAPE TOP DETECT
HI8 MP
ME/MP
REC PROOF
S001
CC LOCK
S002
H001 S REEL DETECT
H002 T REEL DETECT
MODE SWITCH
S901
M-SW(A)
M-SW(B)
M-SW(C)
M903 LOADING MOTOR
CN402
GND
TAPE TOP(C)
HI8 MP
S REEL(-)
S REEL(+)
ME/MP
REC PROOF
TAPE END(C)
TAPE LED(A)
HALL COM
T REEL(-)
T REEL(+)
SENSOR VCC
TAPE LED(K)
C LOCK SW
CN403 8P
COM GND
M-SW(A)
M-SW(B)
M-SW(C)
LM(-)
LM(-)
LM(+)
LM(+)
CN400 10P
CN401 12P
CAPSTAN FG
M902
CAPSTAN MOTOR
CAPSTAN MOTOR DRIVE
DEW SENSOR
DRUM MOTOR
M901
B-MECHA CHASSIS
FP-248 FLEXIBLE
FP-220 FLEXIBLE

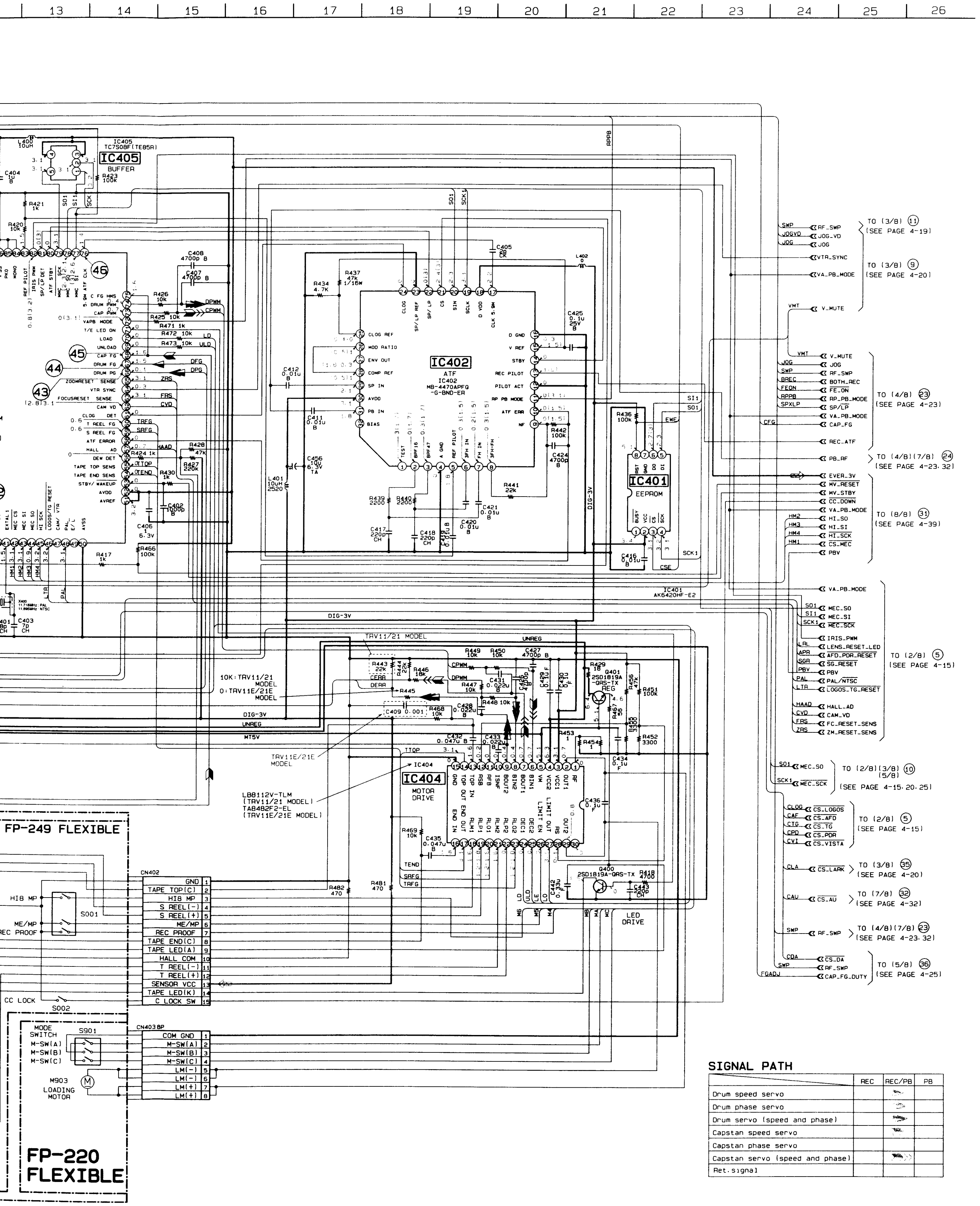
SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		➤	
Drum phase servo		➤	
Drum servo (speed and phase)		➤	
Capstan speed servo		➤	
Capstan phase servo			
Capstan servo (speed and phase)		➤	
Ret.signal			

VC-167 BOARD



• See page 4-7 for VC-167 BOARD printed wiring board.


13
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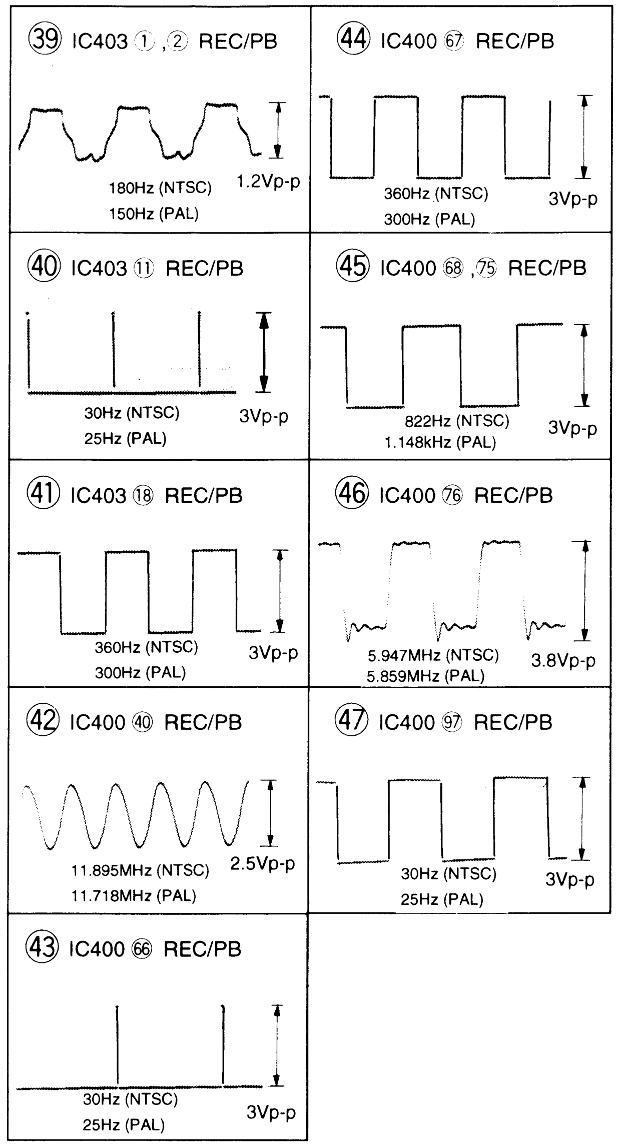
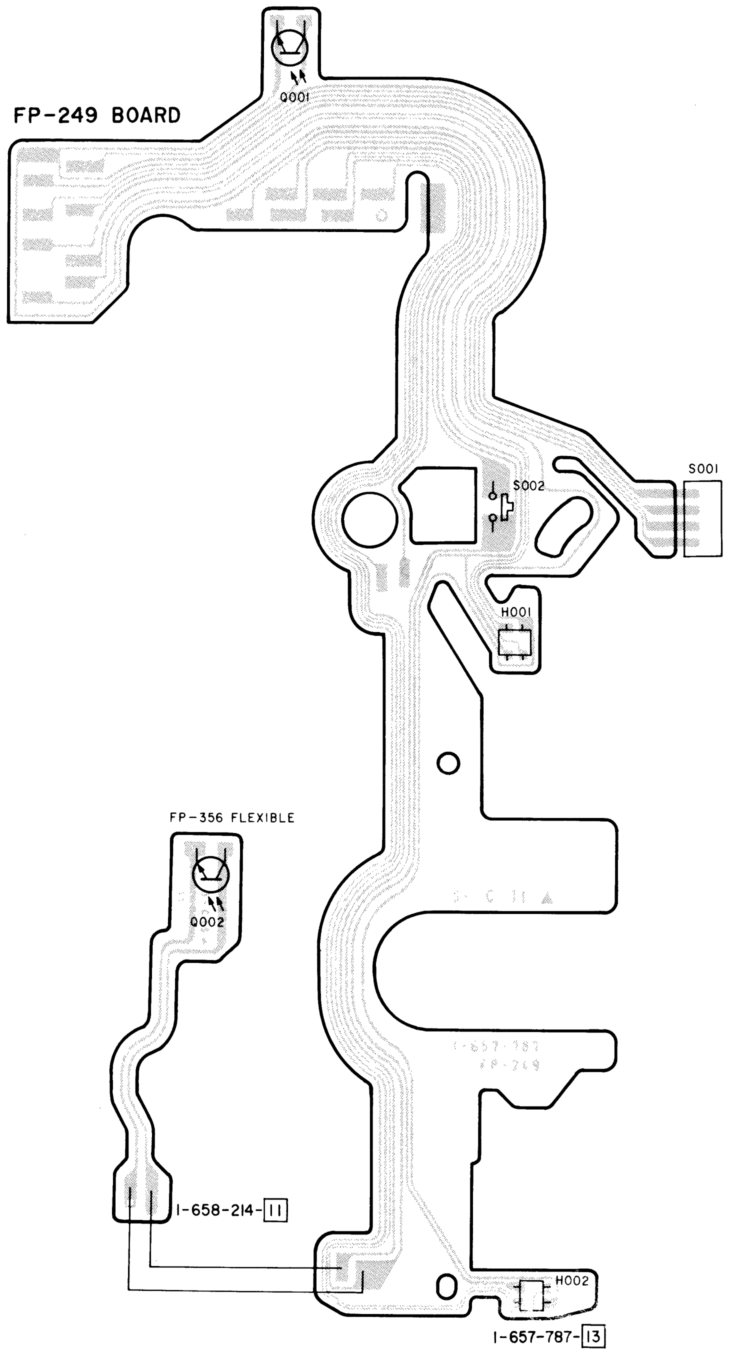
21
22
23
24
25
26
IC405 TC7S08F(TE85R)
IC405 BUFFER
IC402 ATF IC402 MB-4470APFG -G-BND-ER
IC401 EEPROM
IC401 AK6420HF-E2
IC404 MOTOR DRIVE
LB8112V-TLM (TRV11/21 MODEL) TA8482F2-EL (TRV11E/21E MODEL)
Q401 2SD1819A -QRS-TX REG
Q400 2SD1819A-QRS-TX
LED DRIVE
10K:TRV11/21 MODEL
0:TRV11E/21E MODEL
TRV11/21 MODEL
TRV11E/21E MODEL
DIG-3V
UNREG
MT5V
TO (3/8) ⑪ (SEE PAGE 4-19)
TO (3/8) ⑨ (SEE PAGE 4-20)
TO (4/8) ㉓ (SEE PAGE 4-23)
TO (4/8)(7/8) ㉔ (SEE PAGE 4-23,32)
TO (8/8) ㉛ (SEE PAGE 4-39)
TO (2/8) ⑤ (SEE PAGE 4-15)
TO (2/8)(3/8) ⑩ (5/8) (SEE PAGE 4-15,20,25)
TO (2/8) ⑤ (SEE PAGE 4-15)
TO (3/8) ㉟ (SEE PAGE 4-20)
TO (7/8) ㉜ (SEE PAGE 4-32)
TO (4/8)(7/8) ㉓ (SEE PAGE 4-23,32)
TO (5/8) ㊱ (SEE PAGE 4-25)
FP-249 FLEXIBLE
HIB MP
S001
ME/MP
REC PROOF
CC LOCK
S002
CN402
GND 1
TAPE TOP(C) 2
HIB MP 3
S REEL(-) 4
S REEL(+) 5
ME/MP 6
REC PROOF 7
TAPE END(C) 8
TAPE LED(A) 9
HALL COM 10
T REEL(-) 11
T REEL(+) 12
SENSOR VCC 13
TAPE LED(K) 14
C LOCK SW 15
MODE SWITCH S901
M-SW(A)
M-SW(B)
M-SW(C)
M903 LOADING MOTOR
CN403 8P
COM GND 1
M-SW(A) 2
M-SW(B) 3
M-SW(C) 4
LM(-) 5
LM(-) 6
LM(+) 7
LM(+) 8
FP-220 FLEXIBLE
㊺
㊸
㊹
㊻

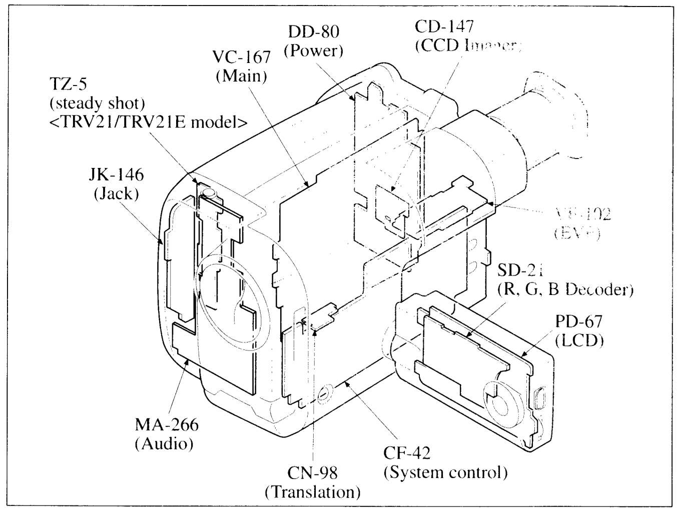
SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo		→	
Drum phase servo		→	
Drum servo (speed and phase)		→	
Capstan speed servo		→	
Capstan phase servo			
Capstan servo (speed and phase)		→	
Ret. signal			

VC-167 BOARD



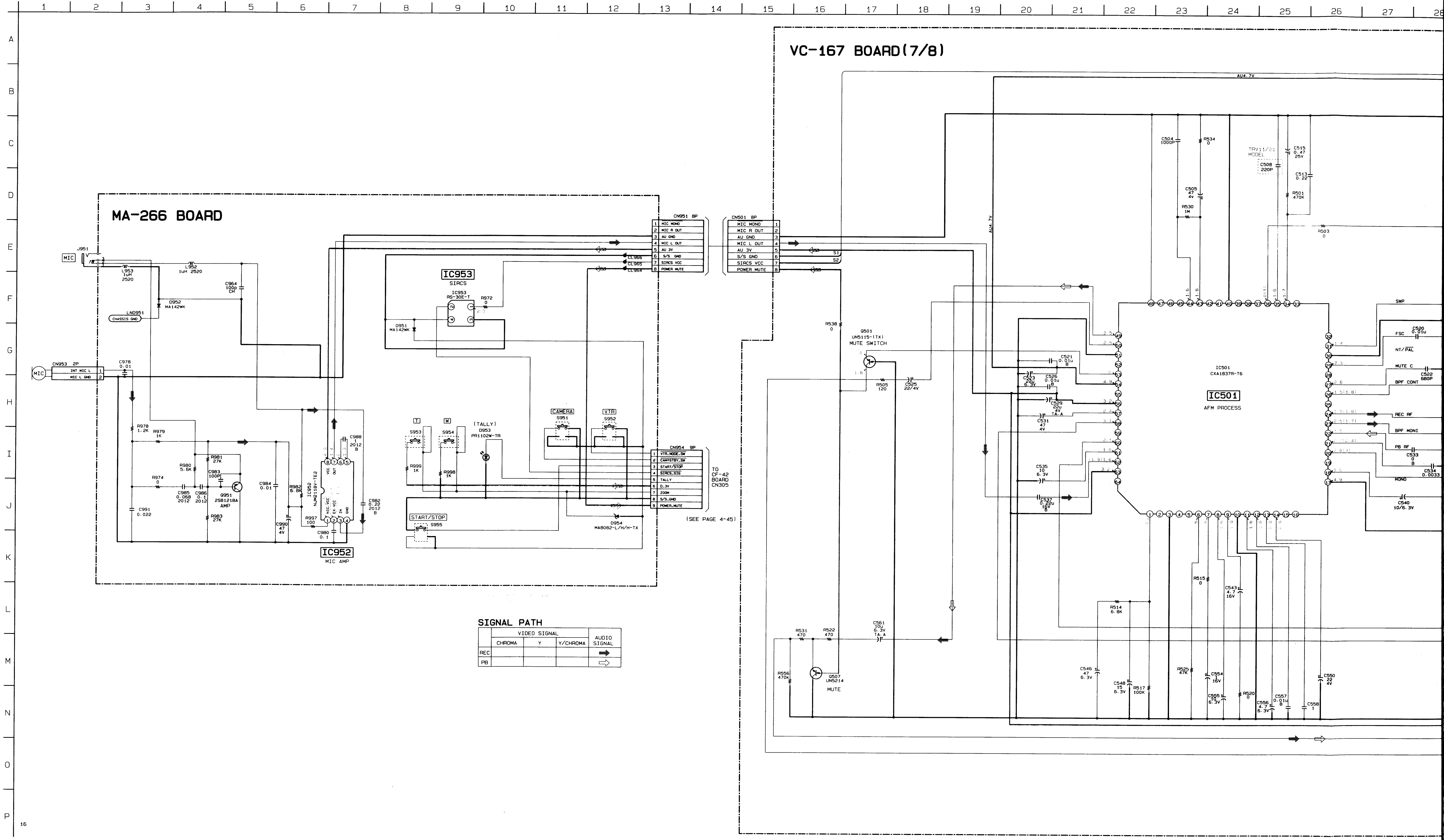

FP-249 BOARD
Q001
S001
S002
H001
FP-356 FLEXIBLE
Q002
1-658-214-11
H002
1-657-787-13


DD-80 (Power)
CD-147 (CCD Imager)
VC-167 (Main)
TZ-5 (steady shot) <TRV21/TRV21E model>
JK-146 (Jack)
VF-102 (EVF)
SD-21 (R, G, B Decoder)
PD-67 (LCD)
MA-266 (Audio)
CF-42 (System control)
CN-98 (Translation)

VC-167 (AUDIO AMP), MA-266 (AUDIO) SCHEMATIC DIAGRAMS

— Ref. No. VC-167 Board; 1,000 Series, MA-266 Board; 2,000 Series —

• See page 4-7 for VC-167 BOARD printed wiring board.


1
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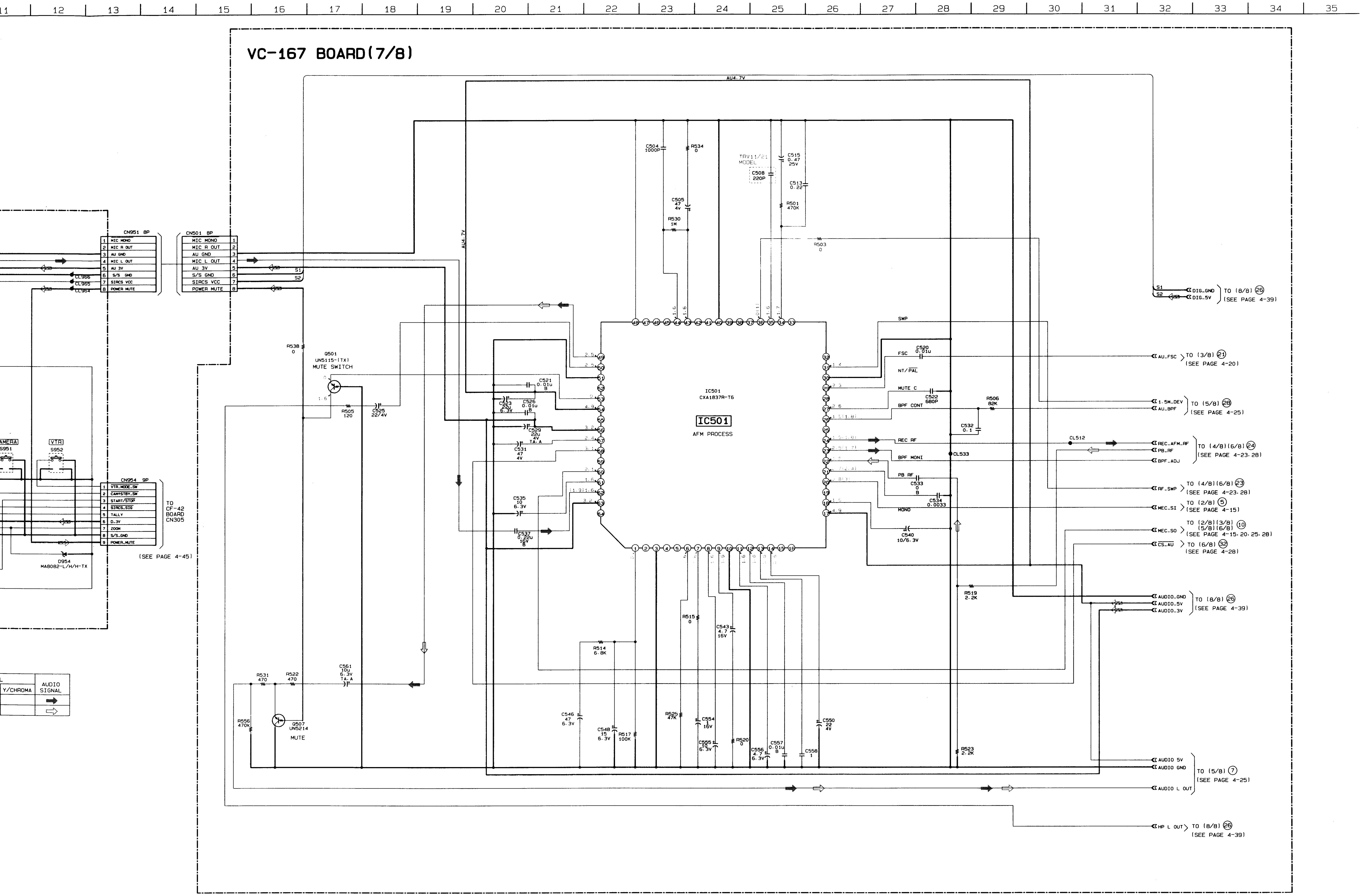
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
P
16
MA-266 BOARD
VC-167 BOARD(7/8)
J951
MIC
L953 1uH 2520
L952 1uH 2520
C964 100p CH
D952 MA142WK
LND951 CHASSIS GND
CN953 2P
MIC
INT MIC L
MIC L GND
C978 0.01
R978 1.2K
R979 1K
R980 5.6K
R981 27K
C983 100P
R974 0
C985 0.068 2012
C986 0.1 2012
Q951 2SB1218A AMP
C991 0.022
R983 27K
C984 0.01
C990 47 4V
R982 6.8K
IC952 NJM2118V-TE2
VCC
OUT
MIC VCC
EX VCC
IN
GND
R997 100
C980 0.1
C988 1 2012 B
C982 0.22 2012 B
IC952
MIC AMP
IC953
SIRCS
IC953 RS-30E-T
R972 0
D951 MA142WK
T
W
S953
S954
R999 1K
R998 1K
(TALLY)
D953 PR1102W-TR
CAMERA
S951
VTR
S952
START/STOP
S955
D954 MA8082-L/H/H-TX
CL966
CL965
CL964
CN951 8P
1 MIC MONO
2 MIC R OUT
3 AU GND
4 MIC L OUT
5 AU 3V
6 S/S GND
7 SIRCS VCC
8 POWER MUTE
CN501 8P
MIC MONO 1
MIC R OUT 2
AU GND 3
MIC L OUT 4
AU 3V 5
S/S GND 6
SIRCS VCC 7
POWER MUTE 8
S1
S2
CN954 9P
1 VTR_MODE_SW
2 CAM+STBY_SW
3 START/STOP
4 SIRCS_SIG
5 TALLY
6 D_3V
7 ZOOM
8 S/S_GND
9 POWER_MUTE
TO CF-42 BOARD CN305
(SEE PAGE 4-45)
AU4.7V
R538 0
Q501 UN5115-(TX) MUTE SWITCH
R505 120
C525 22/4V
C504 1000P
R534 0
TRV11/21 MODEL
C508 220P
C515 0.47 25V
C513 0.22
C505 47 4V
R530 1M
R501 470K
R503 0
C521 0.01u B
C523 22u 6.3V
C526 0.01u B
C529 22u 4V TA.A
C531 47 4V
C535 10 6.3V
C537 0.22u 16V B
IC501 CXA1837R-T6
IC501
AFM PROCESS
SWP
FSC
C520 0.01u
NT/PAL
MUTE C
C522 680P
BPF CONT
REC RF
BPF MONI
PB RF
C533 0 B
C534 0.0033
MONO
C540 10/6.3V
R515 0
C543 4.7 16V
R514 6.8K
R531 470
R522 470
C561 10u 6.3V TA.A
R556 470K
Q507 UN5214 MUTE
C546 47 6.3V
C548 15 6.3V
R517 100K
R525 47K
C554 1 16V
C555 10 6.3V
R520 0
C556 4.7 6.3V
C557 0.01u B
C558 1
C550 22 4V

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

C-167 BOARD printed wiring board.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20
21
22
23
24
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26
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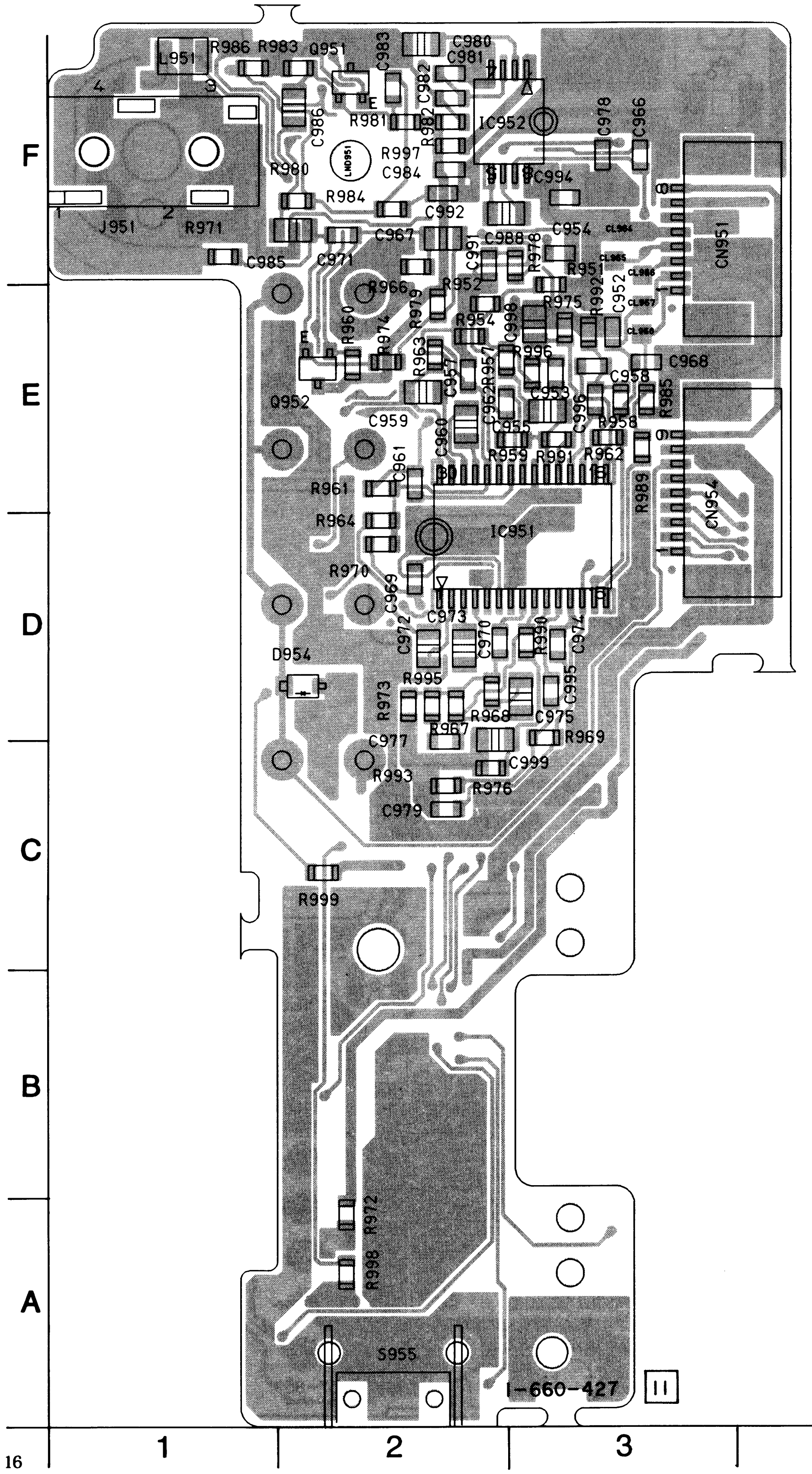
30
31
32
33
34
35
VC-167 BOARD(7/8)
AU4.7V
CN951 8P
MIC MONO
MIC R OUT
AU GND
MIC L OUT
AU 3V
S/S GND
SIRCS VCC
POWER MUTE
CL966
CL965
CL964
CN501 8P
MIC MONO
MIC R OUT
AU GND
MIC L OUT
AU 3V
S/S GND
SIRCS VCC
POWER MUTE
S1
S2
R538 0
Q501 UN5115-(TX) MUTE SWITCH
R505 120
C525 22/4V
C504 1000P
R534 0
C505 47 4V
R530 1M
TRV11/21 MODEL
C508 220P
C515 0.47 25V
C513 0.22
R501 470K
R503 0
C521 0.01u B
C523 22u 6.3V
C526 0.01u B
C529 22u 4V TA.A
C531 47 4V
C535 10 6.3V
C537 0.22u 16V B
IC501 CXA1837R-T6
IC501
AFM PROCESS
SWP
FSC
C520 0.01u
NT/PAL
MUTE C
C522 680P
BPF CONT
R506 82K
C532 0.1
REC RF
BPF MONI
CL533
PB RF
C533 0 B
C534 0.0033
MONO
C540 10/6.3V
CL512
S1 DIG_GND
S2 DIG_5V
TO (8/8) ㉖ (SEE PAGE 4-39)
AU_FSC
TO (3/8) ㉑ (SEE PAGE 4-20)
1.5M_DEV
AU_BPF
TO (5/8) ㉘ (SEE PAGE 4-25)
REC_AFM_RF
PB_RF
BPF_ADJ
TO (4/8)(6/8) ㉔ (SEE PAGE 4-23, 28)
RF_SWP
TO (4/8)(6/8) ㉓ (SEE PAGE 4-23, 28)
MEC_SI
TO (2/8) ⑤ (SEE PAGE 4-15)
MEC_SO
TO (2/8)(3/8) (5/8)(6/8) ⑩ (SEE PAGE 4-15, 20, 25, 28)
CS_AU
TO (6/8) ㉜ (SEE PAGE 4-28)
R519 2.2K
AUDIO_GND
AUDIO_5V
AUDIO_3V
TO (8/8) ㉖ (SEE PAGE 4-39)
R515 0
C543 4.7 16V
R514 6.8K
C546 47 6.3V
C548 15 6.3V
R517 100K
R525 47K
C554 16V
C555 10 6.3V
R520 0
C556 4.7 6.3V
C557 0.01u B
C558 1
C550 22 4V
R523 2.2K
AUDIO 5V
AUDIO GND
AUDIO L OUT
TO (5/8) ⑦ (SEE PAGE 4-25)
HP L OUT
TO (8/8) ㉖ (SEE PAGE 4-39)
R531 470
R522 470
C561 10u 6.3V TA.A
R556 470K
Q507 UN5214 MUTE
CAMERA
S951
VTR
S952
CN954 9P
VTR_MODE_SW
CAMSTBY_SW
START/STOP
SIRCS_SIG
TALLY
D_3V
ZOOM
S/S_GND
POWER_MUTE
TO CF-42 BOARD CN305
(SEE PAGE 4-45)
D954 MA8082-L/H/H-TX
Y/CHROMA
AUDIO SIGNAL

MA-266 (AUDIO) PRINTED WIRING BOARD

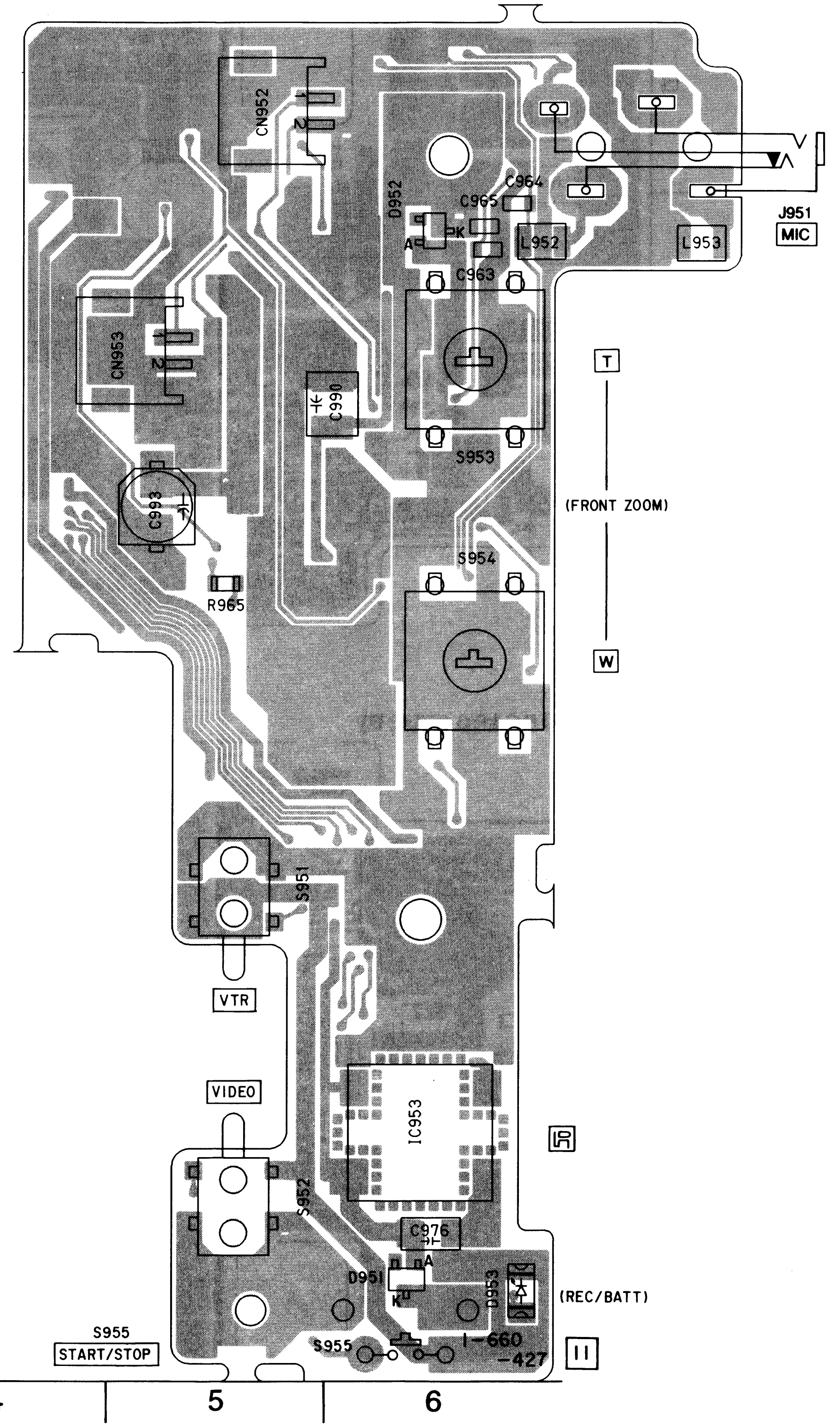
— Ref. No. MA-266 Board; 2,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

MA-266 BOARD (SIDE A)

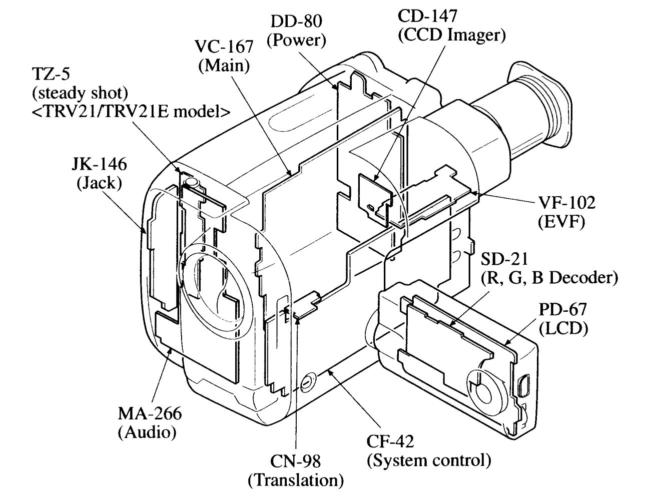

F
E
D
C
B
A
1
2
3
J951
L951
R986
R983
Q951
C983
C980
C981
C982
C986
R981
R982
IC952
C978
C966
R997
C984
R980
R984
C994
C992
R971
C985
C971
C967
C991
C988
C954
R978
R951
R966
R952
R975
R992
C952
R979
R960
R974
R994
C998
R963
R957
R996
C968
Q952
C957
C953
C958
R965
C959
C960
C955
R958
R959
R991
R962
R961
R964
IC951
R989
CN951
CN954
R970
C969
C973
C972
C970
R990
C974
D954
R995
C995
R973
R968
C975
R967
R969
C977
C999
R993
R976
C979
R999
R972
R998
S955
1-660-427
11

MA-266 BOARD (SIDE B)


4
5
6
CN952
D952
C964
C965
C963
L952
L953
J951
MIC
CN953
C990
S953
T
(FRONT ZOOM)
W
C993
S954
R965
S951
VTR
VIDEO
IC953
S952
C976
D951
D953
(REC/BATT)
S955
START/STOP
1-660-427
11

MA-266 BOARD

C964	F–6	J951	F–6
C978	C–3		
C980	F–2	L952	F–6
C982	F–2	L953	F–6
C983	F–2		
C984	C–2	Q951	F–2
C985	F–2		
C986	F–2	R972	A–2
C988	F–3	R974	E–2
C990	C–6	R978	F–3
C991	F–2	R979	E–2
C993	E–5	R980	F–2
		R981	F–2
CN951	F–3	R982	F–2
CN953	E–5	R983	F–2
CN954	E–3	R997	F–2
		R998	A–2
D951	A–6	R999	C–2
D952	F–6		
D953	A–6	S951	C–5
D954	D–2	S952	B–5
		S953	E–6
IC952	F–3	S954	D–6
IC953	B–6	S955	A–6


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

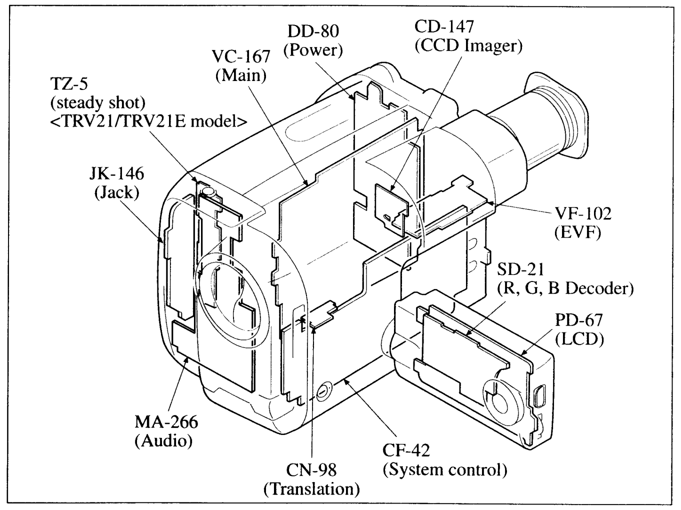
DD-80 (POWER) PRINTED WIRING BOARD

— Ref. No. DD-80 Board; 1,000 Series —

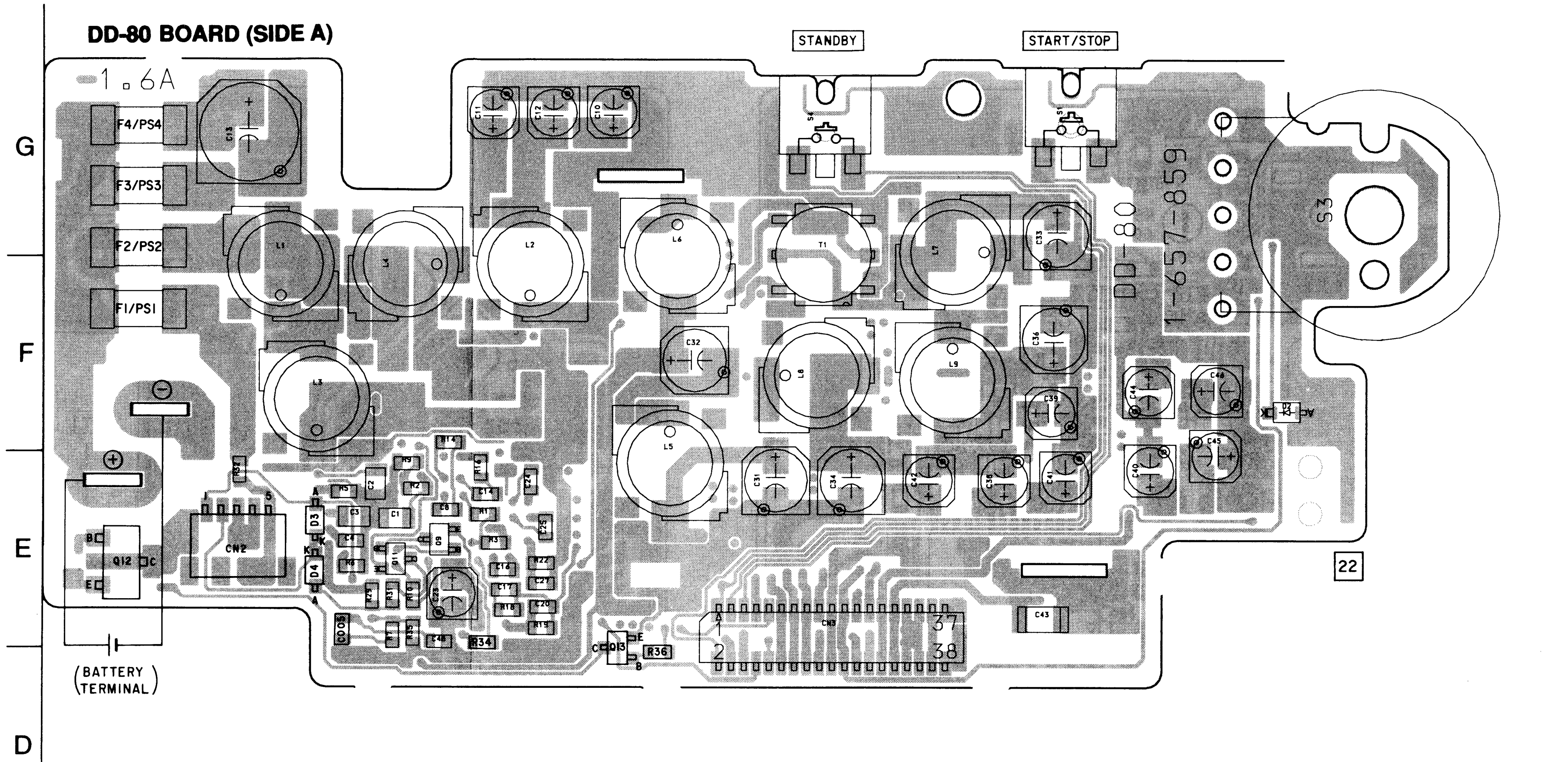
There are few cases that the part printed on this diagram isn't mounted in this model.

DD-80 BOARD

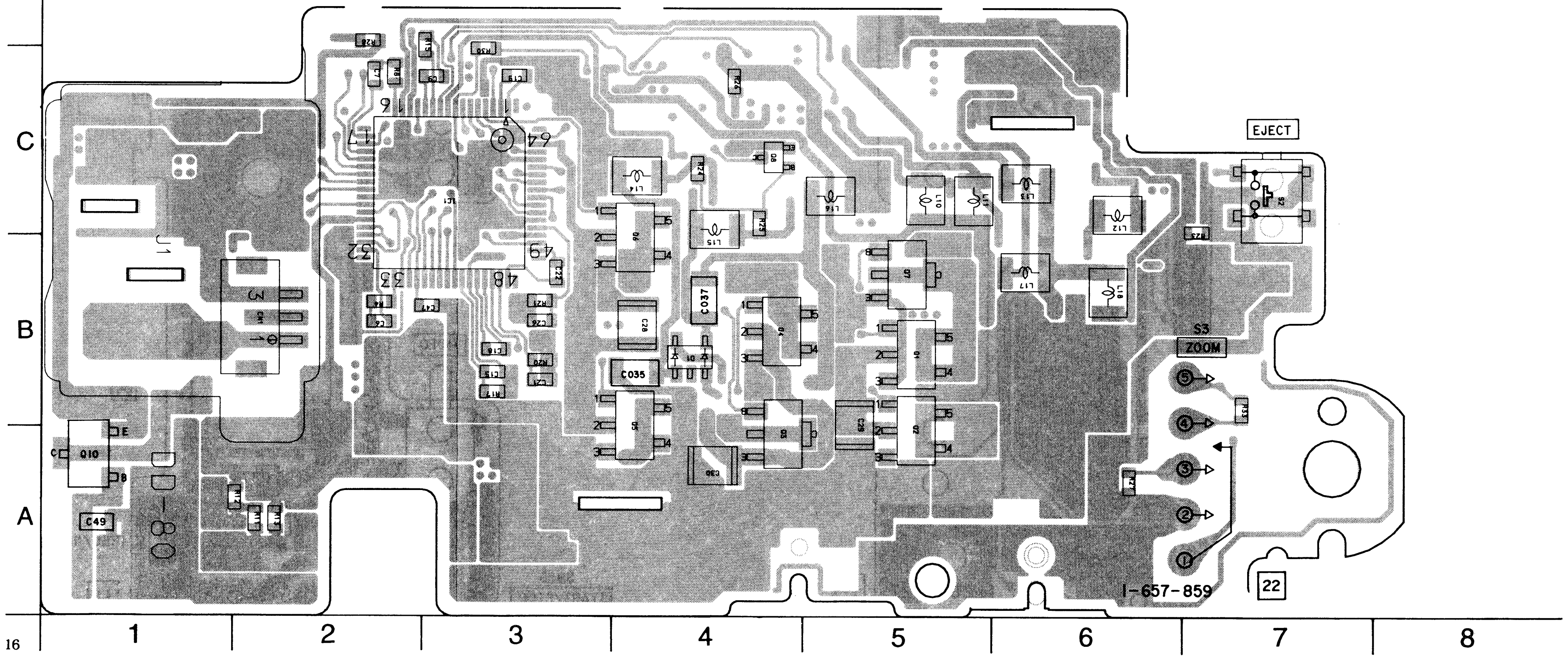
C001	E–2	C038	E–5	L007	G–5	R005	E–2
C002	E–2	C039	F–6	L008	F–4	R006	E–2
C003	E–2	C040	E–6	L009	F–5	R007	E–2
C004	E–2	C041	E–6	L010	C–5	R008	C–2
C005	E–2	C042	E–5			R009	E–2
C006	B–2	C043	E–6	L011	C–5	R010	E–2
C007	C–2	C044	F–6	L012	C–6	R014	F–3
C008	E–3	C045	F–6	L013	C–6	R015	D–3
C009	C–3	C046	F–6	L014	C–4	R016	E–3
C010	G–3	C047	B–3	L015	B–4	R017	B–3
C011	G–3	C048	E–3	L016	C–5	R018	E–3
C012	G–3			L017	B–6	R019	E–3
C013	G–1	CN002	E–2	L018	B–6	R020	B–3
C014	E–3	CN003	E–5			R021	B–3
C016	E–3			PS001	F–1	R022	E–3
C018	B–3	D001	B–4	PS002	G–1	R023	C–7
C019	C–3	D002	F–7	PS003	G–1	R024	C–4
C022	B–3			PS004	G–1	R025	C–4
C024	E–3	F001	F–1			R026	C–4
C025	E–3	F002	G–1	Q001	B–5	R027	A–6
C026	B–3	F003	G–1	Q002	A–5	R032	E–2
C027	E–3	F004	G–1	Q003	A–4	R033	B–7
C028	B–4			Q004	B–4		
C029	B–5	IC001	C–3	Q005	B–4	S001	G–6
C030	A–4			Q006	B–4	S002	C–7
C031	E–4	J001	B–1	Q007	B–5	S003	B–7
C032	F–4			Q008	C–4	S004	G–4
C033	G–6	L002	G–3				
C034	E–5	L003	F–2	R001	E–3	T001	G–4
C035	B–4	L004	F–2	R002	E–2		
C036	F–6	L005	F–4	R003	E–3		
C037	B–4	L006	G–4	R004	B–2		


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

DD-80 BOARD (SIDE A)


STANDBY
START/STOP
1.6A
F4/PS4
F3/PS3
F2/PS2
F1/PS1
1-657-859
DD-80
S3
CN2
CN3
BATTERY
TERMINAL
22
G
F
E
D

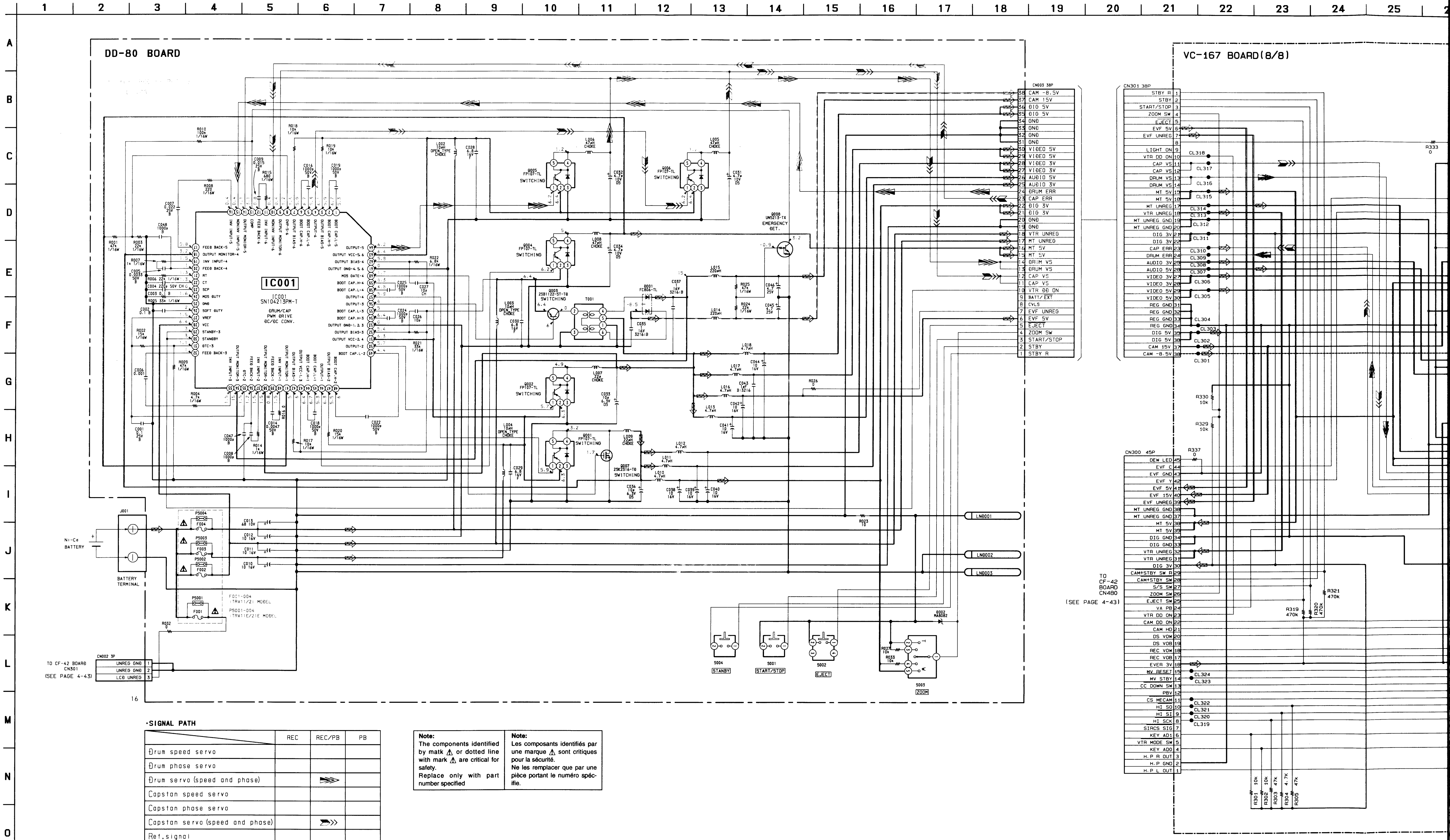
DD-80 BOARD (SIDE B)


EJECT
S3
ZOOM
1-657-859
22
C
B
A
16
1
2
3
4
5
6
7
8

DD-80 (POWER), VC-167 (VTR SWITCH) SCHEMATIC DIAGRAMS

— Ref. No. DD-80 Board, VC-167 Board; 1,000 Series —

• See page 4-7 for VC-167 BOARD printed wiring board.



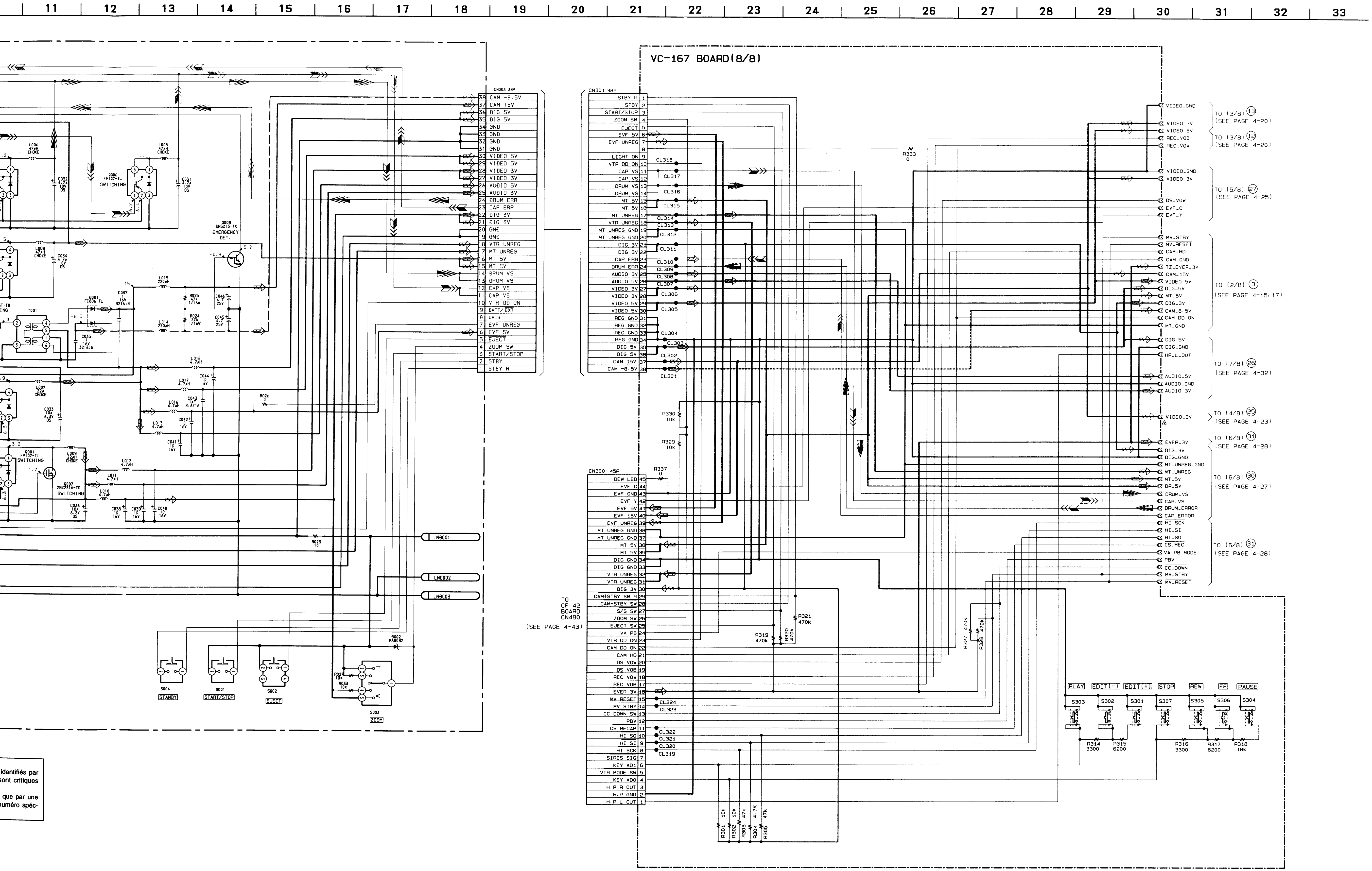
DD-80 BOARD
VC-167 BOARD(8/8)
IC001
IC001 SN104213PM-T DRUM/CAP PWM DRIVE DC/DC CONV.
CN003 38P
CN301 38P
CN300 45P
CN002 3P
TO CF-42 BOARD CN301 (SEE PAGE 4-43)
TO CF-42 BOARD CN480 (SEE PAGE 4-43)
Ni-Cd BATTERY
J001
BATTERY TERMINAL
Q005 FP107-TL SWITCHING
Q006 FP107-TL SWITCHING
Q004 FP107-TL SWITCHING
Q002 FP107-TL SWITCHING
Q001 FP107-TL SWITCHING
Q003 2SB1122-ST-T0 SWITCHING
Q007 2SK2316-T0 SWITCHING
Q008 UN5213-TX EMERGENCY DET.
T001
D001 FC806-TL
D002 MA8082
LN0001
LN0002
LN0003
S004 STANBY
S001 START/STOP
S002 EJECT
S003 ZOOM
F001 F002 F003 F004
PS001 PS002 PS003 PS004
F001-004 (TRV11/21 MODEL)
PS001-004 (TRV11E/21E MODEL)
R301 10k R302 10k R303 47k R304 4.7k R305
R319 470k R320 470k R321 470k
R329 10k R330 10k R333 0 R337 0

·SIGNAL PATH

	REC	REC/PB	PB
Drum speed servo			
Drum phase servo			
Drum servo (speed and phase)		>>>	
Capstan speed servo			
Capstan phase servo			
Capstan servo (speed and phase)		>>>	
Ref.signal			

Note:	Note:
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

C-167 BOARD printed wiring board.


11
12
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15
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17
18
19
20
21
22
23
24
25
26
27
28
29
30
31
32
33
VC-167 BOARD(8/8)
CN003 38P
CN301 38P
CN300 45P
TO CF-42 BOARD CN480 (SEE PAGE 4-43)
Q008 UN5213-TX EMERGENCY DET.
Q006 FP127-TL SWITCHING
Q001 FP127-TL SWITCHING
Q007 2SK2316-T0 SWITCHING
T001
L006 47μH CHOKE
L005 47μH CHOKE
L008 47μH CHOKE
L007 22μH CHOKE
L009 22μH CHOKE
LN0001
LN0002
LN0003
D002 MA8082
S004 STANBY
S001 START/STOP
S002 EJECT
S003 ZOOM
PLAY
EDIT(-)
EDIT(+)
STOP
REW
FF
PAUSE
S303
S302
S301
S307
S305
S306
S304
R314 3300
R315 6200
R316 3300
R317 6200
R318 18k
R301 10k
R302 10k
R303 47k
R304 4.7k
R305 47k
R319 470k
R320 470k
R321 470k
R327 470k
R328 470k
R329 10k
R330 10k
R333 0
R337 0
TO (3/8) ⑬ (SEE PAGE 4-20)
TO (3/8) ⑫ (SEE PAGE 4-20)
TO (5/8) ㉗ (SEE PAGE 4-25)
TO (2/8) ③ (SEE PAGE 4-15, 17)
TO (7/8) ㉖ (SEE PAGE 4-32)
TO (4/8) ㉕ (SEE PAGE 4-23)
TO (6/8) ㉛ (SEE PAGE 4-28)
TO (6/8) ㉚ (SEE PAGE 4-27)
TO (6/8) ㉛ (SEE PAGE 4-28)

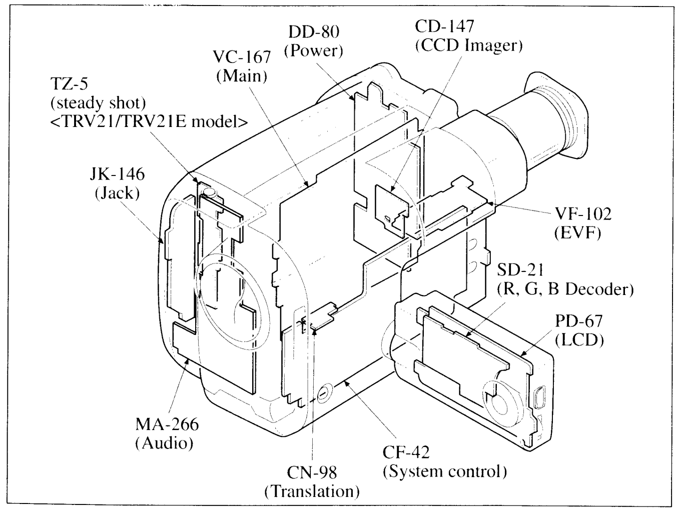
identifiés par
sont critiques
que par une
numéro spéc-

CF-42 (SYSTEM CONTROL) PRINTED WIRING BOARDS

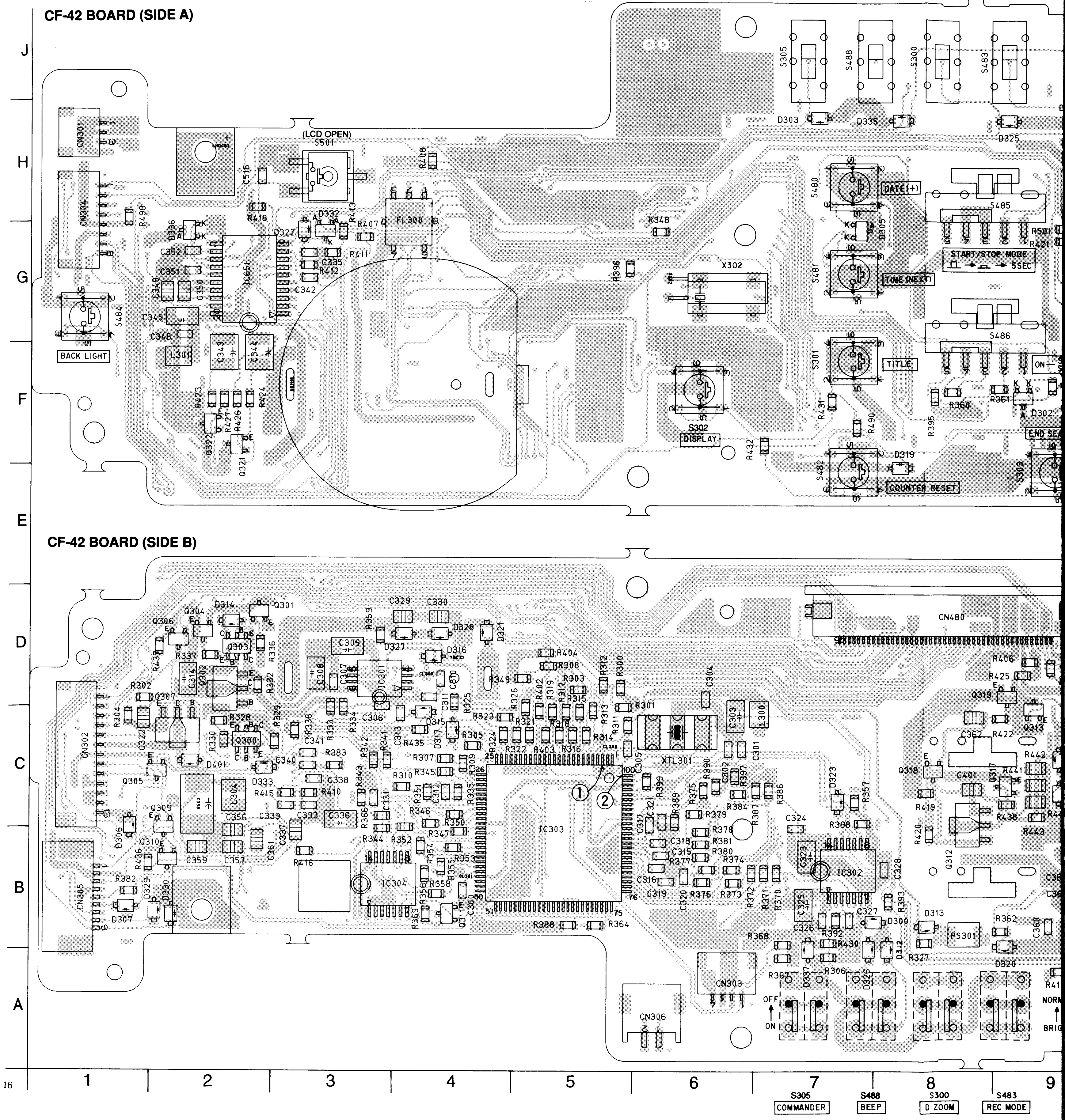
— Ref. No. CF-42 Board Series —

CF-42 BOARD

BH480	F–3	C358	C–2	FL300	G–4	R312	D–5	R365	F–9	R411	G–4
		C359	B–2			R313	C–5	R366	C–3	R412	G–3
C300	B–4	C516	H–2	IC301	D–4	R314	C–5	R367	A–7	R413	G–4
C301	C–7			IC302	B–7	R315	C–5	R368	A–7	R414	A–9
C302	C–6	CN301	H–1	IC303	C–5	R316	C–5	R369	B–4	R415	C–3
C303	C–6	CN302	C–1	IC304	B–4	R317	C–5	R370	B–7	R416	B–3
C304	C–6	CN304	H–1	IC651	G–3	R318	C–5	R371	B–7	R418	G–3
C305	C–6	CN305	B–1			R319	C–5	R372	B–6	R421	G–9
C306	C–4	CN306	A–6	J480	A–10	R321	C–5	R373	B–6	R424	F–3
C308	D–3	CN480	D–8	J481	B–10	R322	C–5	R374	B–6	R430	B–7
C310	D–4	CN481	C–10			R323	C–4	R375	C–6	R431	F–7
C311	C–4			L300	C–7	R324	C–4	R376	B–6	R432	F–7
C312	C–4	D301	C–10	L301	F–2	R325	C–4	R377	B–6	R435	C–4
C314	D–2	D302	F–9	L303	A–9	R326	C–5	R378	C–6	R437	D–2
C315	B–6	D303	H–7	L304	C–2	R327	B–8	R379	C–6	R490	F–8
C316	B–6	D304	H–9	L305	B–9	R332	D–3	R380	B–6	R493	B–9
C317	C–6	D305	G–7			R333	C–3	R381	C–6	R494	A–10
C318	B–6	D306	C–1	PS301	A–8	R334	C–3	R382	B–1	R495	A–10
C319	B–6	D307	B–1			R335	C–4	R383	C–3	R496	A–10
C320	B–6	D310	H–10	Q301	D–3	R336	D–3	R384	C–6	R498	G–2
C321	C–6	D311	A–10	Q302	D–2	R337	D–2	R385	D–10	R501	G–9
C322	C–1	D312	A–8	Q303	D–2	R338	C–3	R386	C–7		
C323	B–7	D314	D–2	Q304	D–2	R341	C–3	R387	C–7	RV301	G–10
C325	B–7	D315	C–4	Q305	C–2	R342	C–3	R388	B–5		
C326	B–7	D316	D–4	Q306	D–2	R343	C–3	R389	C–6	S300	A–8
C327	B–8	D317	C–4	Q307	C–2	R344	B–3	R390	C–6	S301	F–7
C328	B–8	D318	B–10	Q309	C–2	R345	C–4	R391	C–10	S302	F–6
C332	B–10	D319	F–8	Q310	B–2	R346	C–4	R392	B–7	S303	E–9
C333	C–3	D320	A–9	Q311	B–4	R347	B–4	R393	B–8	S304	A–9
C335	G–3	D321	D–5	Q314	C–10	R348	G–6	R394	C–10	S305	A–7
C336	C–3	D322	G–3	Q315	C–10	R349	D–5	R395	F–8	S480	H–7
C337	B–3	D323	C–7	Q316	B–9	R350	C–4	R396	G–6	S481	G–7
C339	C–3	D324	A–10			R351	C–4	R397	C–6	S482	E–7
C340	C–3	D325	H–9	R300	D–5	R352	B–4	R398	B–7	S483	A–9
C341	C–3	D326	A–7	R301	C–6	R353	B–4	R399	C–6	S484	G–1
C342	G–3	D327	D–4	R302	D–2	R354	B–4	R400	C–10	S485	G–9
C344	F–2	D328	D–4	R303	D–5	R355	B–4	R401	C–9	S486	F–8
C345	G–2	D331	G–9	R304	C–1	R356	B–4	R402	C–5	S488	A–7
C348	G–2	D332	G–3	R305	C–4	R357	C–7	R403	C–5	S501	H–3
C349	G–2	D333	C–3	R306	A–7	R358	B–4	R404	D–5		
C350	G–2	D335	H–7	R307	C–4	R359	D–3	R406	D–9	X302	G–6
C351	G–2	D336	G–2	R308	D–5	R360	F–8	R407	G–4		
C352	G–2	D337	A–7	R309	C–4	R361	F–8	R408	H–5	XTL301	C–6
C356	C–2	D401	C–2	R310	C–4	R362	B–9	R409	G–10		
C357	B–2	D402	C–9	R311	C–5	R364	B–5	R410	C–3		

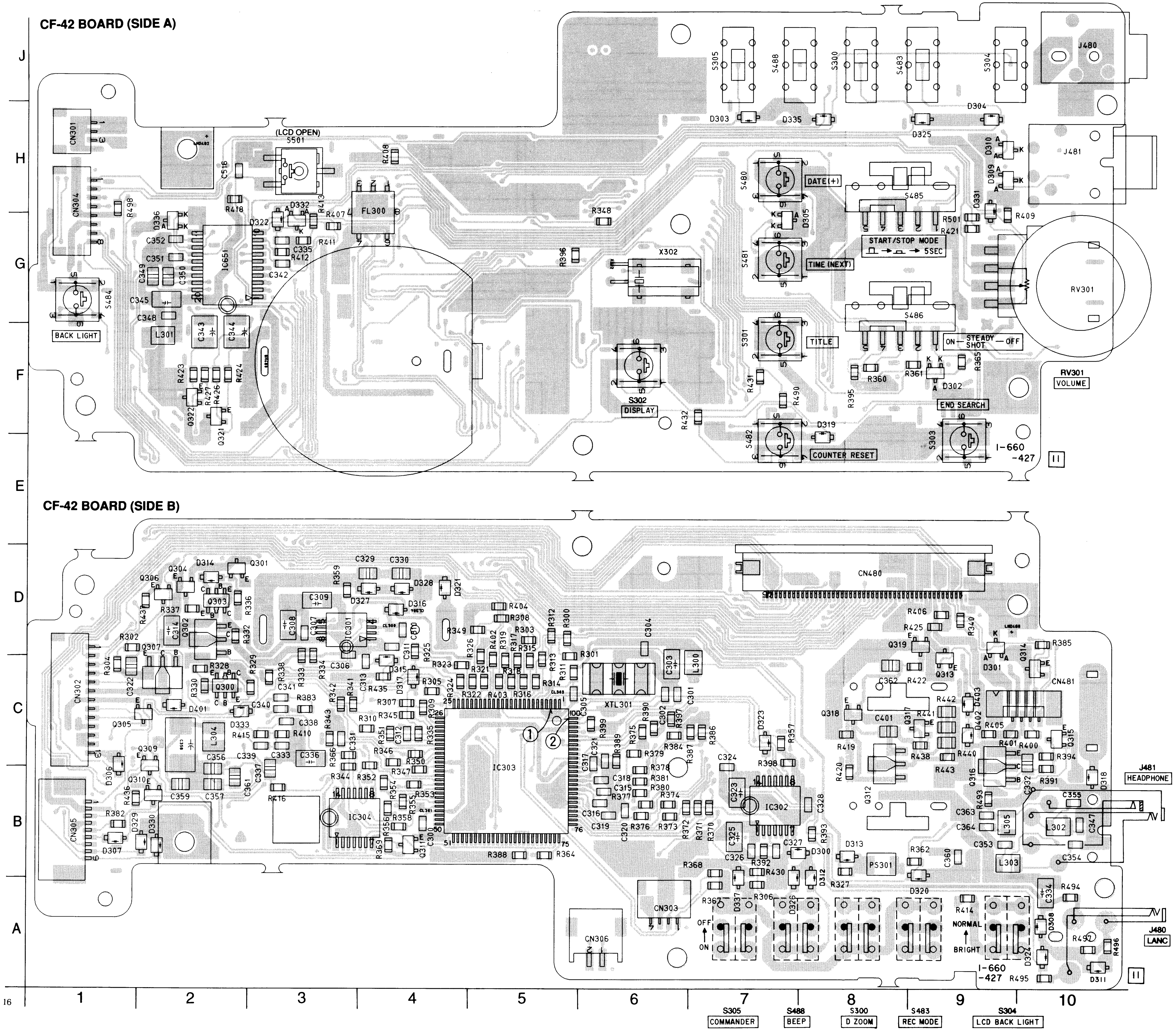

DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

There are few cases that the part printed on this diagram isn't mounted in this model.


CF-42 BOARD (SIDE A)
CF-42 BOARD (SIDE B)
J
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
16
(LCD OPEN)
S501
BACK LIGHT
DISPLAY
DATE(+)
TIME (NEXT)
START/STOP MODE
5SEC
TITLE
COUNTER RESET
END SEA
ON
IC651
IC301
IC302
IC303
IC304
FL300
X302
XTL301
CN301
CN302
CN303
CN304
CN305
CN306
CN480
PS301
OFF
ON
NORM
BRIG
S305
COMMANDER
S488
BEEP
S300
D ZOOM
S483
REC MODE

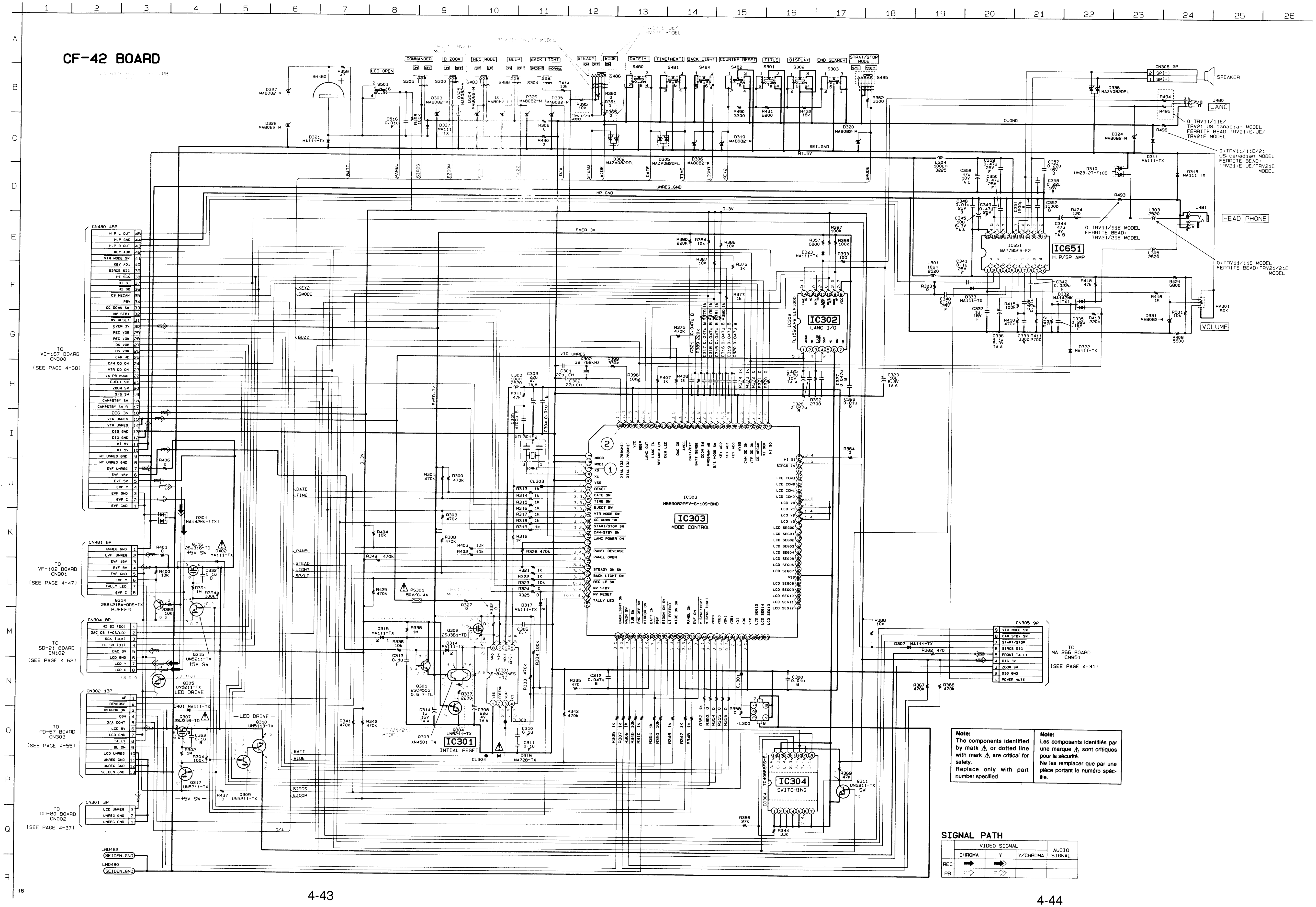
R365	F-9	R411	G-4
R366	C-3	R412	G-3
R367	A-7	R413	G-4
R368	A-7	R414	A-9
R369	B-4	R415	C-3
R370	B-7	R416	B-3
R371	B-7	R418	G-3
R372	B-6	R421	G-9
R373	B-6	R424	F-3
R374	B-6	R430	B-7
R375	C-6	R431	F-7
R376	B-6	R432	F-7
R377	B-6	R435	C-4
R378	C-6	R437	D-2
R379	C-6	R490	F-8
R380	B-6	R493	B-9
R381	C-6	R494	A-10
R382	B-1	R495	A-10
R383	C-3	R496	A-10
R384	C-6	R498	G-2
R385	D-10	R501	G-9
R386	C-7		
R387	C-7	RV301	G-10
R388	B-5		
R389	C-6	S300	A-8
R390	C-6	S301	F-7
R391	C-10	S302	F-6
R392	B-7	S303	E-9
R393	B-8	S304	A-9
R394	C-10	S305	A-7
R395	F-8	S480	H-7
R396	G-6	S481	G-7
R397	C-6	S482	E-7
R398	B-7	S483	A-9
R399	C-6	S484	G-1
R400	C-10	S485	G-9
R401	C-9	S486	F-8
R402	C-5	S488	A-7
R403	C-5	S501	H-3
R404	D-5		
R406	D-9	X302	G-6
R407	G-4		
R408	H-5	XTL301	C-6
R409	G-10		
R410	C-3		

There are few cases that the part printed on this diagram isn't mounted in this model.


CF-42 BOARD (SIDE A)
CF-42 BOARD (SIDE B)
J
H
G
F
E
D
C
B
A
1
2
3
4
5
6
7
8
9
10
(LCD OPEN)
S501
BACK LIGHT
DATE(+)
TIME (NEXT)
TITLE
START/STOP MODE
5SEC
ON — STEADY SHOT — OFF
S302
DISPLAY
COUNTER RESET
END SEARCH
RV301
VOLUME
1-660-427
11
X302
FL300
IC651
CN480
IC303
IC302
IC304
IC301
XTL301
J481
HEADPHONE
J480
LANC
OFF
ON
NORMAL
BRIGHT
S305
COMMANDER
S488
BEEP
S300
D ZOOM
S483
REC MODE
S304
LCD BACK LIGHT

CF-42 (SYSTEM CONTROL) SCHEMATIC DIAGRAMS

— Ref. No. CF-42 Board —


CF-42 BOARD
IC301
INTIAL RESET
IC302
LANC I/O
IC303
MODE CONTROL
IC304
SWITCHING
IC651
H.P/SP AMP
CN480 45P
TO VC-167 BOARD CN300 (SEE PAGE 4-38)
CN481 8P
TO VF-102 BOARD CN901 (SEE PAGE 4-47)
CN304 8P
TO SD-21 BOARD CN102 (SEE PAGE 4-62)
CN302 13P
TO PD-67 BOARD CN303 (SEE PAGE 4-55)
CN301 3P
TO DD-80 BOARD CN002 (SEE PAGE 4-37)
CN305 9P
TO MA-266 BOARD CN951 (SEE PAGE 4-31)
CN306 2P
SPEAKER
LANC
HEAD PHONE
VOLUME
LED DRIVE
COMMANDER
D ZOOM
REC MODE
BEEP
BACK LIGHT
STEADY
WIDE
DATE(+)
TIME(NEXT)
BACK LIGHT
COUNTER RESET
TITLE
DISPLAY
END SEARCH
START/STOP MODE
LCD OPEN
+5V SW
D.GND
UNREG.GND
HP.GND
EVER.3V
D.3V
SEI.GND

Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified

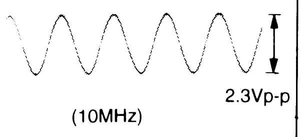
Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

SIGNAL PATH

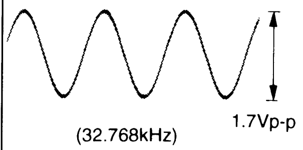
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		
PB	⇨	⇨		

CF-42 BOARD

① IC303 ③ REC/PB



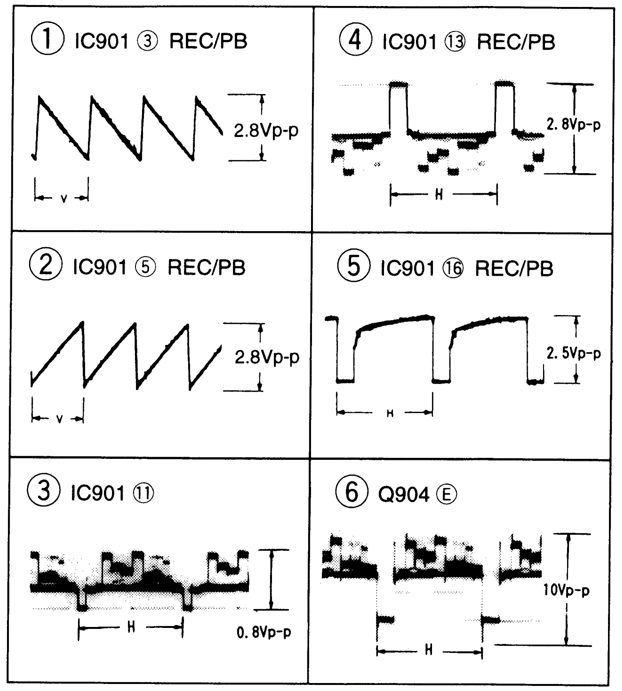
② IC303 (100) REC/PB

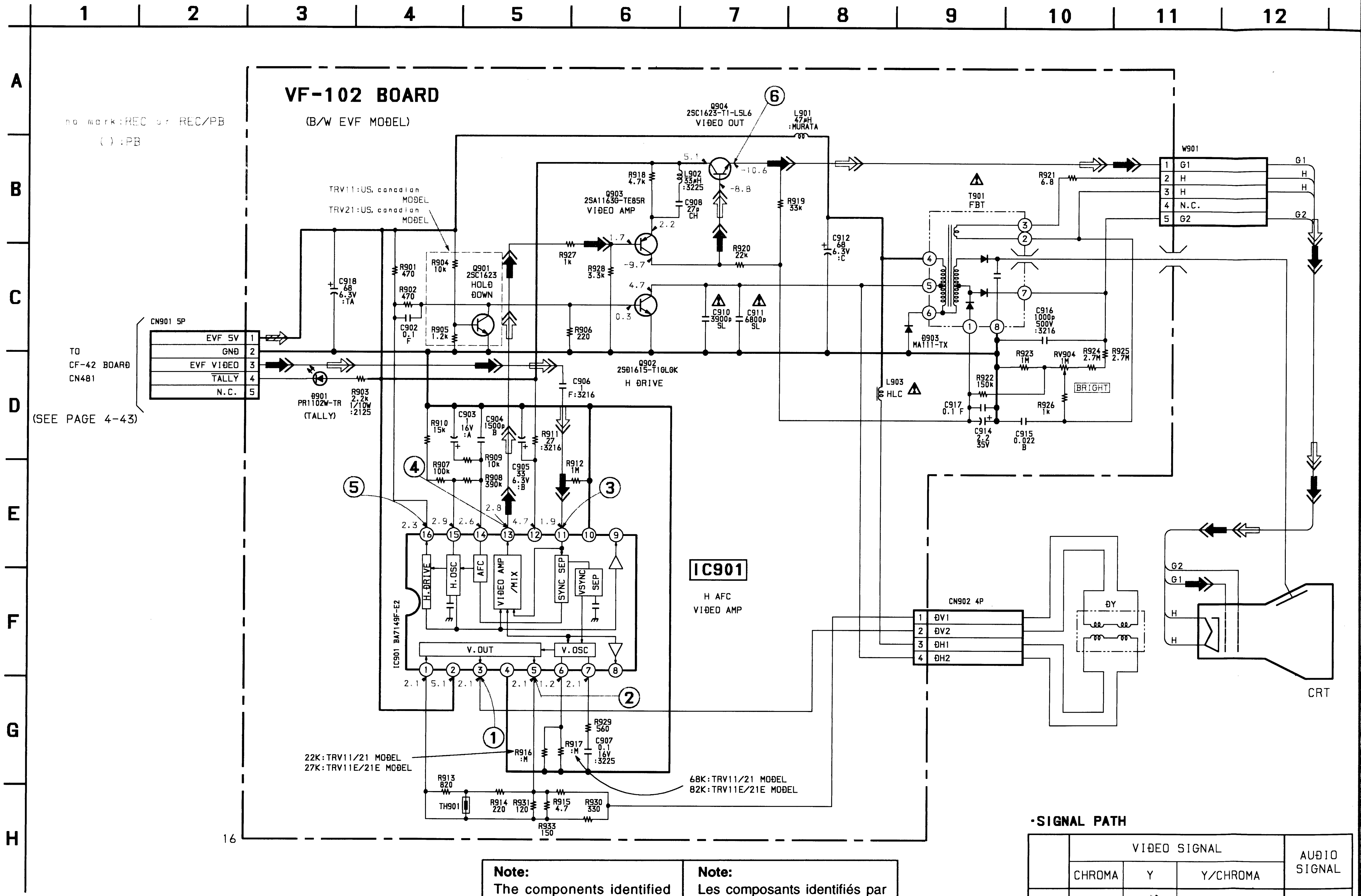


VF-102 (EVF) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. : VF-102 Board; 6,000 Series —

VF-102 BOARD



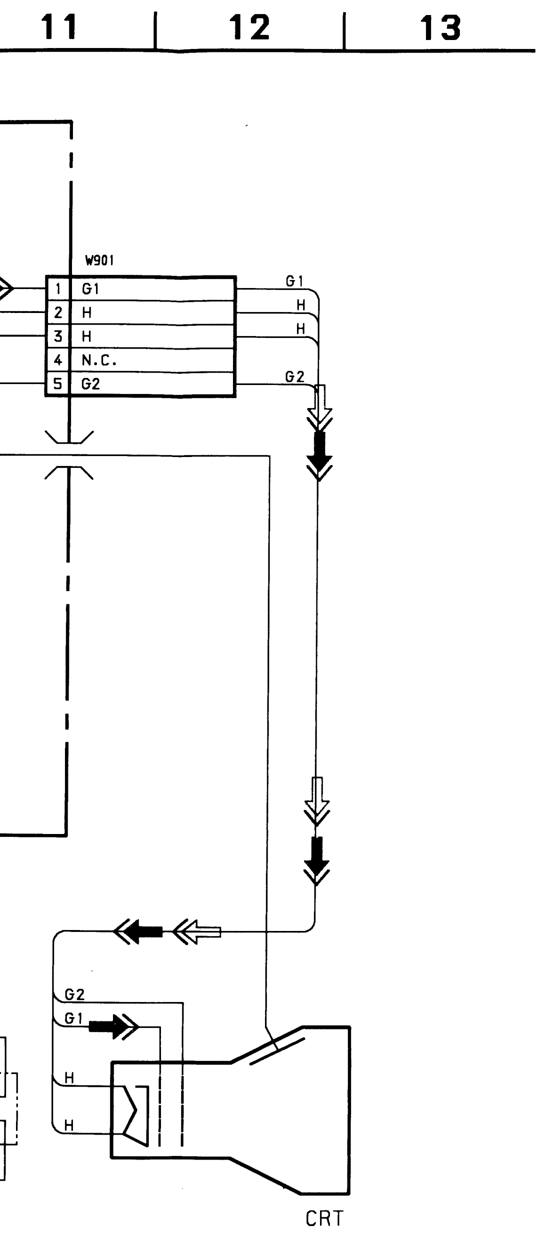

1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
H
VF-102 BOARD
(B/W EVF MODEL)
no mark:REC or REC/PB
( ):PB
TO CF-42 BOARD CN481
(SEE PAGE 4-43)
CN901 5P
EVF 5V
GND
EVF VIDEO
TALLY
N.C.
D901 PR1102W-TR (TALLY)
R903 2.2k 1/10W :2125
C918 68 6.3V :TA
TRV11:US, canadian MODEL
TRV21:US, canadian MODEL
Q901 2SC1623 HOLD DOWN
R901 470
R902 470
R904 10k
R905 1.2k
C902 0.1 F
R906 220
Q902 2SB1615-T1GLGK H DRIVE
Q903 2SA1163G-TE85R VIDEO AMP
Q904 2SC1623-T1-L5L6 VIDEO OUT
R918 4.7k
L902 33μH :3225
C908 27p CH
R927 1k
R928 3.3k
R920 22k
R919 33k
L901 47μH :MURATA
C906 1 F:3216
C910 3900p SL
C911 6800p SL
C912 68 6.3V :C
T901 FBT
D903 MA111-TX
L903 HLC
C916 1000p 500V :3216
R921 6.8
W901
G1
H
H
N.C.
G2
R922 150k
R923 1M
RV904 1M
R924 2.7M
R925 2.7M
BRIGHT
R926 1k
C917 0.1 F
C914 2.2 35V
C915 0.022 B
C903 1 16V :A
C904 1500p B
R910 15k
R907 100k
R909 10k
R908 390k
C905 33 6.3V :B
R911 27 :3216
R912 1M
H.DRIVE
H.OSC
AFC
VIDEO AMP /MIX
SYNC SEP
VSYNC SEP
V.OUT
V.OSC
IC901 BA7149F-E2
IC901
H AFC VIDEO AMP
R916 :M
R917 :M
R929 560
C907 0.1 16V :3225
22K:TRV11/21 MODEL
27K:TRV11E/21E MODEL
68K:TRV11/21 MODEL
82K:TRV11E/21E MODEL
R913 820
TH901
R914 220
R931 120
R915 4.7
R930 330
R933 150
CN902 4P
DV1
DV2
DH1
DH2
DY
CRT
G2
G1
H
H
16

Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

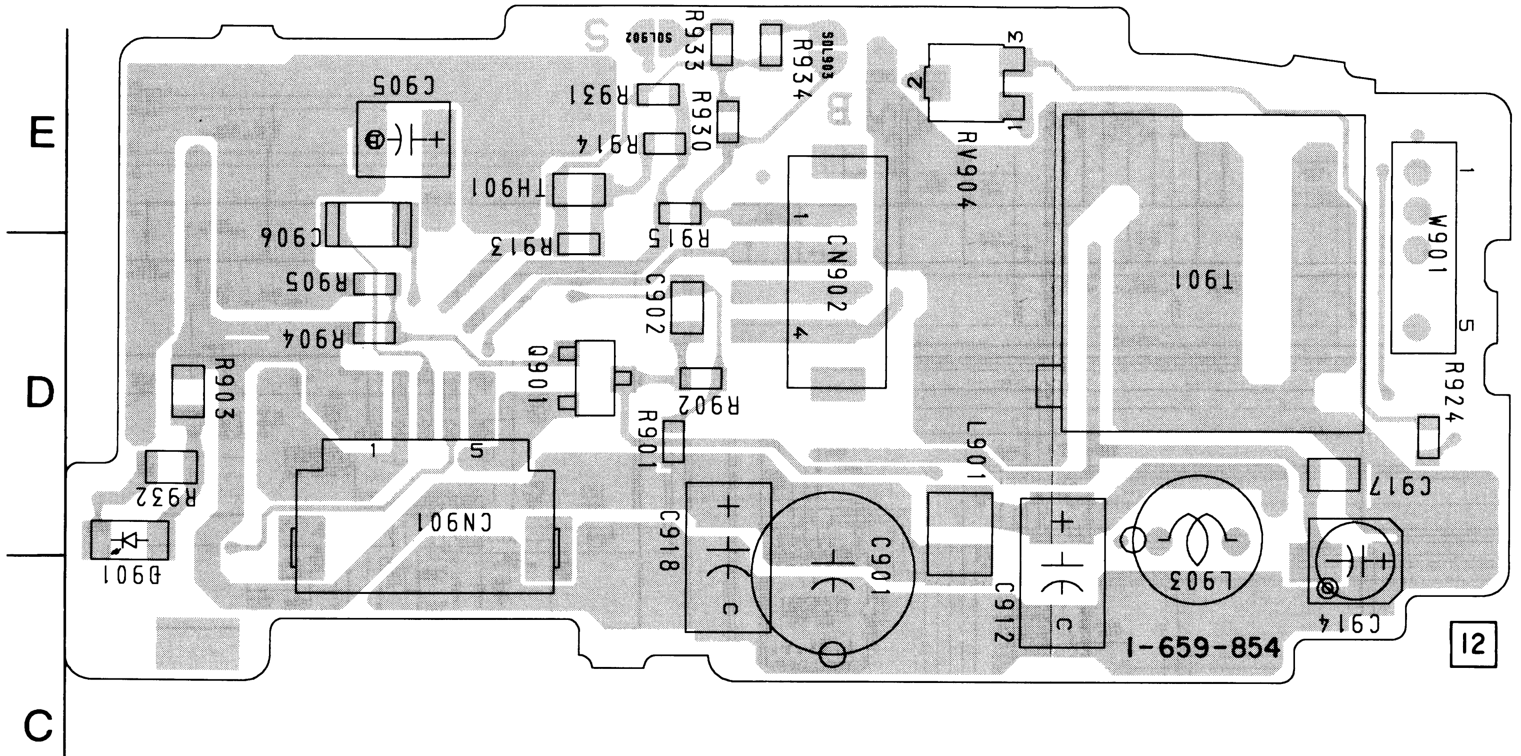
·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC		➡		
PB		⇨		

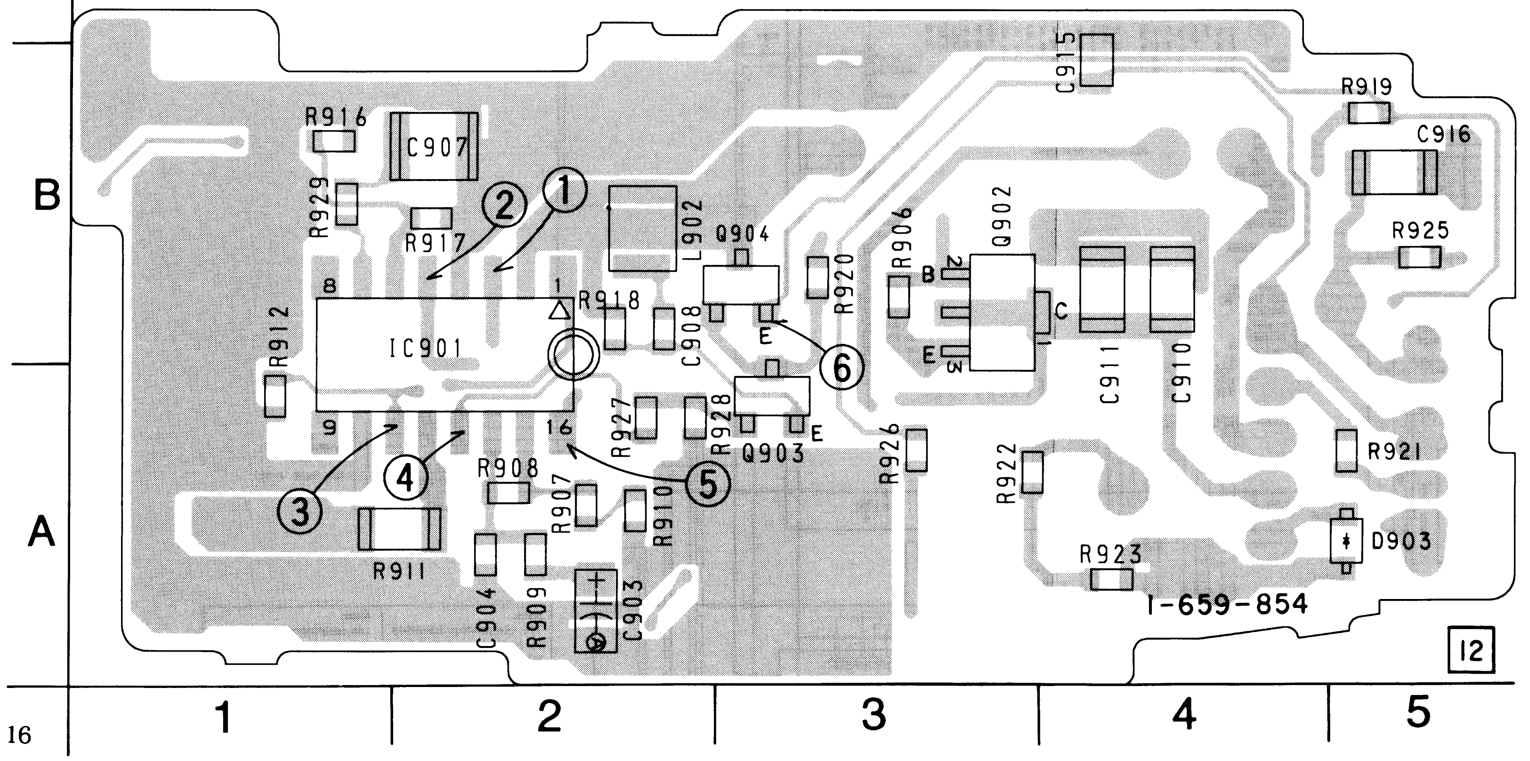

11
12
13
W901
1 G1
2 H
3 H
4 N.C.
5 G2
G1
H
H
G2
G2
G1
H
H
CRT

VIDEO SIGNAL		AUDIO SIGNAL
Y	Y/CHROMA	
➡		
⇨		

VF-102 BOARD (SIDE A)

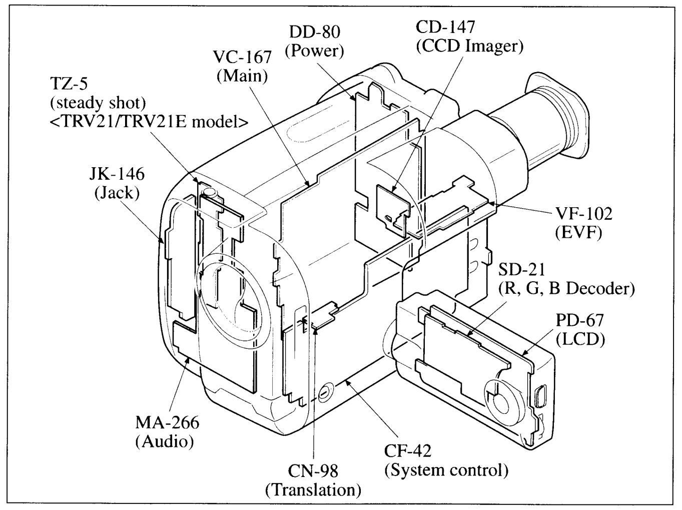

E
D
C
C905
R931
R914
R933
R930
R934
TH901
C906
R913
R915
R905
R904
C902
Q901
R902
R903
R901
CN902
RV904
T901
W901
1
5
R924
L901
C917
R932
CN901
1
5
D901
C918
C901
C912
L903
C914
1-659-854
12

VF-102 BOARD (SIDE B)


B
A
C915
R919
C916
R916
C907
R929
R917
①
②
L902
Q904
R906
Q902
R925
R920
8
1
R918
IC901
C908
R912
⑥
C911
C910
9
16
R927
R928
Q903
R926
R922
R921
③
④
⑤
R908
R907
R910
R911
C904
R909
C903
R923
D903
1-659-854
12
16
1
2
3
4
5

VF-102 BOARD

C902	D-3	L902	B-2	R918	B-2
C903	A-2	L903	D-4	R919	B-5
C904	A-2			R920	B-3
C905	E-2	Q901	D-2	R921	A-5
C906	D-1	Q902	B-3	R922	A-3
C907	B-2	Q903	A-3	R923	A-4
C908	B-2	Q904	B-3	R924	D-5
C910	B-4			R925	B-5
C911	B-4	R901	D-2	R926	A-3
C912	D-4	R902	D-3	R927	A-2
C914	C-5	R903	D-1	R928	A-3
C915	B-4	R904	D-1	R929	B-1
C916	B-5	R905	D-1	R930	E-3
C917	D-5	R906	B-3	R931	E-2
C918	D-3	R907	A-2	R933	E-3
		R908	A-2		
CN901	D-2	R909	A-2	RV904	E-3
CN902	D-3	R910	A-2		
		R911	A-2	T901	D-4
D901	D-1	R912	B-1		
D903	A-5	R913	D-2	TH901	E-2
		R914	E-2		
IC901	B-2	R915	E-3	W901	E-5
		R916	B-1		
L901	D-3	R917	B-2		


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CN-98
(Translation)
CF-42
(System control)

TRV21/TRV21E MODEL

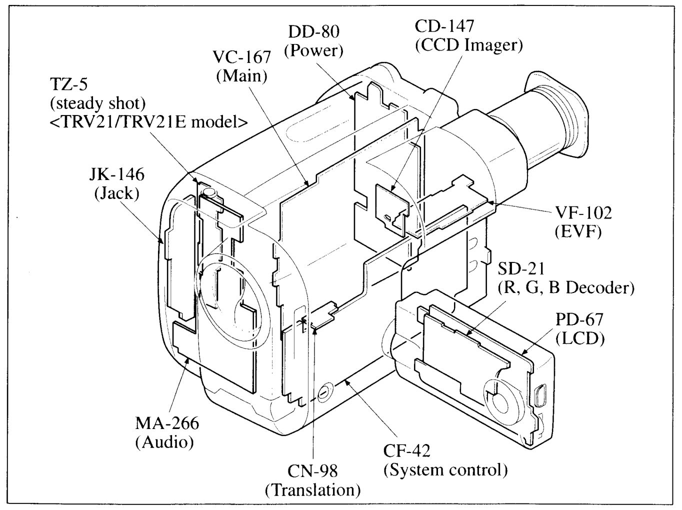
TZ-5 (STEADY SHOT) PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM

— Ref. No. : TZ-5 Board; 5,000 Series —

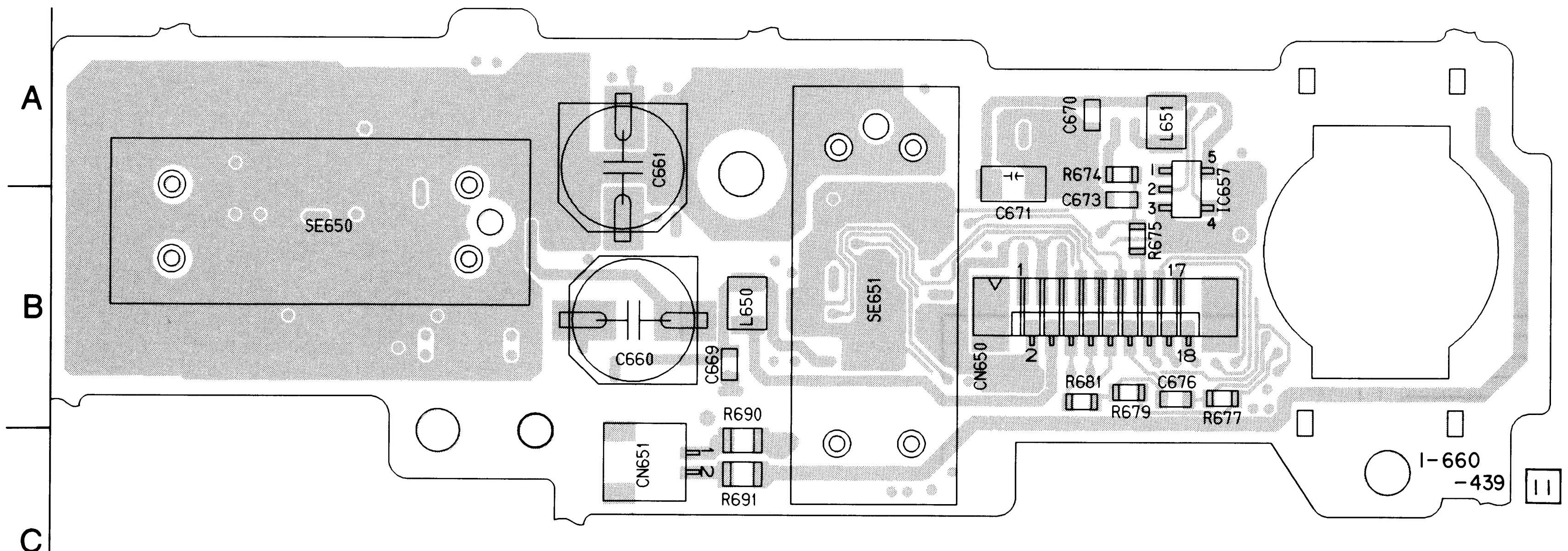
There are few cases that the part printed on this diagram isn't mounted in this model.

TZ-5 BOARD

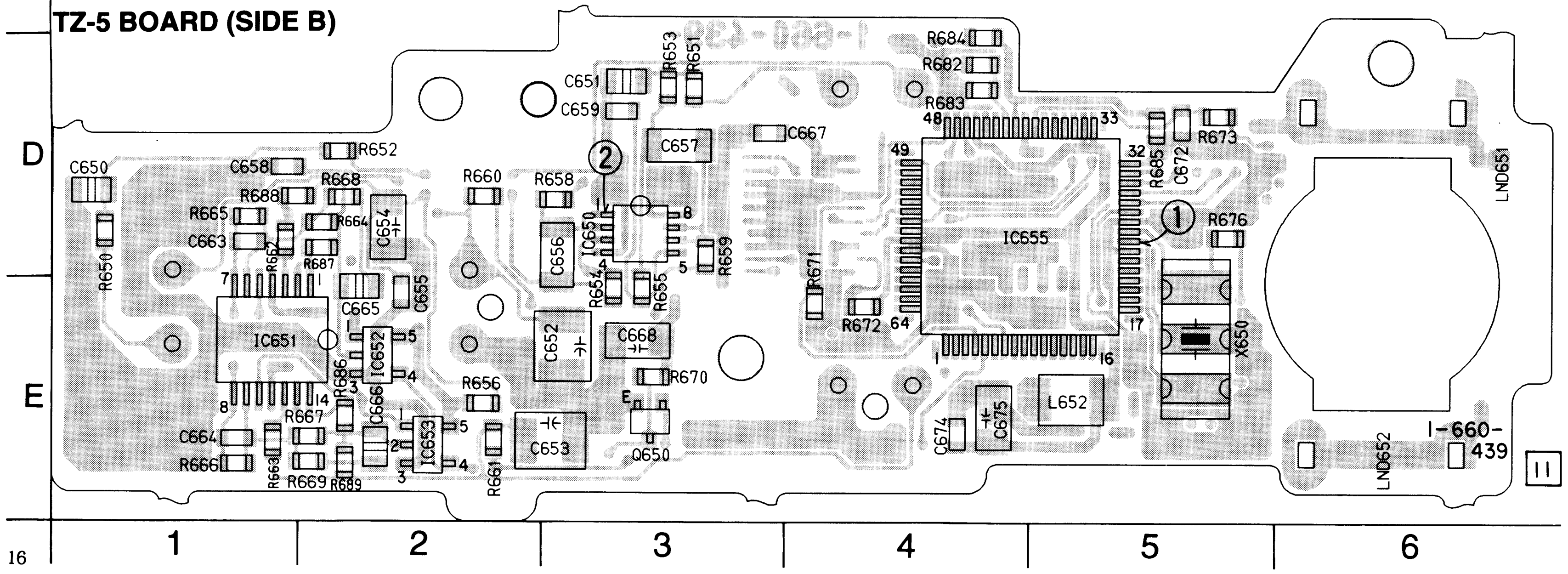
C650	D-1
C651	D-3
C652	E-3
C653	E-3
C654	D-2
C655	E-2
C656	D-3
C657	D-3
C658	D-1
C659	D-3
C660	B-3
C661	A-3
C663	D-1
C664	E-1
C665	E-2
C666	E-2
C668	E-3
C669	B-3
C672	D-5
C673	B-5
C674	E-4
C675	E-4
CN650	B-4
IC650	D-3
IC651	E-1
IC652	E-2
IC653	E-3
IC655	D-5
L650	B-3
L652	E-5
Q650	E-3
R650	D-1
R651	D-3
R652	D-2
R653	D-3
R654	E-3
R655	E-3
R656	E-2
R658	D-3
R659	D-3
R660	D-2
R661	E-2
R662	D-1
R663	E-1
R664	D-2
R665	D-1
R666	E-1
R667	E-2
R668	D-2
R669	E-2
R670	E-3
R672	E-4
R673	D-5
R674	B-5
R675	B-5
R676	D-5
R682	D-4
R683	D-4
R684	D-4
R685	D-5
R688	D-1
R689	E-2
SE650	B-2
SE651	B-4
X650	E-5

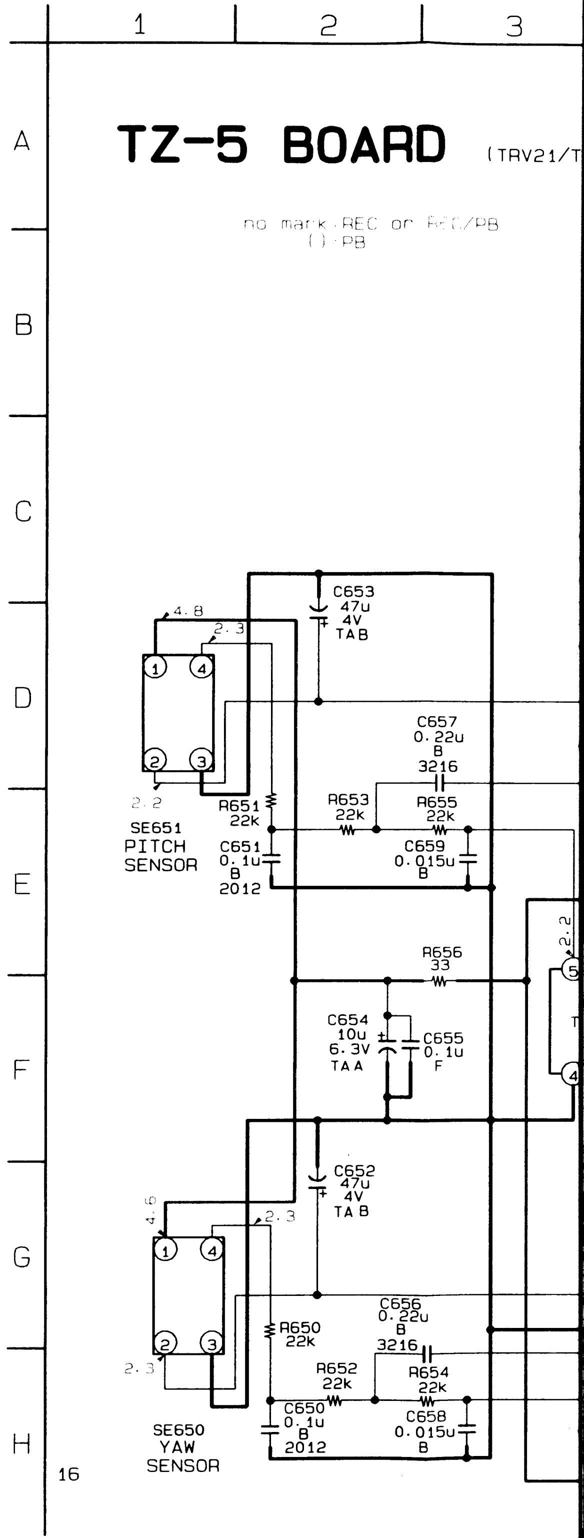

DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

TZ-5 BOARD (SIDE A)


A
B
C
SE650
C661
C660
L650
C669
SE651
CN650
CN651
R690
R691
C670
L651
C671
R674
C673
IC657
R675
R681
C676
R679
R677
1
2
17
18
1-660-439
11

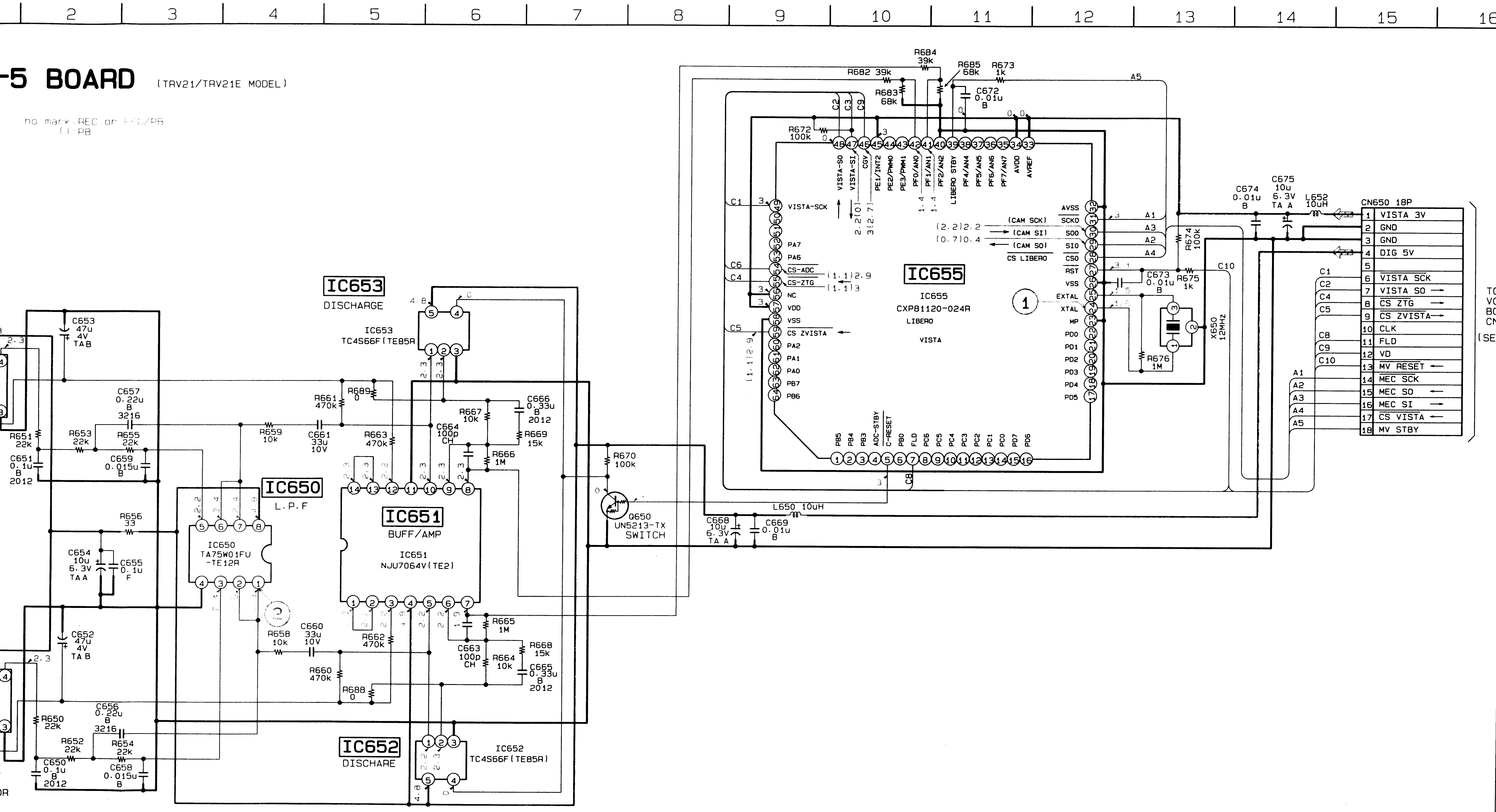
TZ-5 BOARD (SIDE B)


D
E
C650
R650
C658
R652
R688
R668
R665
C663
R664
R662
R687
C654
C655
C665
IC651
IC652
R686
C666
R667
C664
R666
R663
R669
R689
IC653
C653
R660
R658
R656
R661
C651
C659
R653
R651
C657
C656
IC650
R654
R655
R659
C652
C668
R670
Q650
R671
R672
R684
R682
R683
C667
IC655
R685
C672
R673
R676
C674
C675
L652
X650
LND651
LND652
1-660-439
11
①
②
16
1
2
3
4
5
6


1
2
3
A
B
C
D
E
F
G
H
TZ-5 BOARD (TRV21/T
no mark : REC or P-C/PB
( ) : PB
C653 47u 4V TAB
4.8
2.3
C657 0.22u B 3216
2.2
R651 22k
R653 22k
R655 22k
SE651 PITCH SENSOR
C651 0.1u B 2012
C659 0.015u B
R656 33
C654 10u 6.3V TAA
C655 0.1u F
C652 47u 4V TAB
4.6
2.3
C656 0.22u B 3216
R650 22k
R652 22k
R654 22k
C650 0.1u B 2012
C658 0.015u B
SE650 YAW SENSOR
16

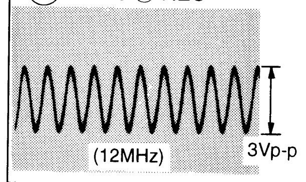
-5 BOARD (TRV21/TRV21E MODEL)

no mark : REC or FF/PB
( ) : PB

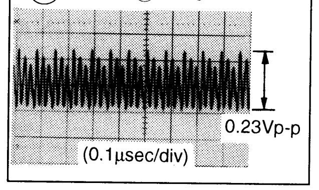

2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
IC653
DISCHARGE
IC653
TC4S66F(TE85R)
IC650
L.P.F
IC650
TA75W01FU
-TE12R
IC651
BUFF/AMP
IC651
NJU7064V(TE2)
IC652
DISCHARE
IC652
TC4S66F(TE85R)
IC655
IC655
CXP81120-024R
LIBERO
VISTA
X650
12MHz
Q650
UN5213-TX
SWITCH
L650 10uH
L652 10uH
C653 47u 4V TAB
C652 47u 4V TAB
C657 0.22u B 3216
C656 0.22u B 3216
C651 0.1u B 2012
C650 0.1u B 2012
C659 0.015u B
C658 0.015u B
C654 10u 6.3V TAA
C655 0.1u F
C661 33u 10V
C660 33u 10V
C664 100p CH
C663 100p CH
C666 0.33u B 2012
C665 0.33u B 2012
C668 10u 6.3V TAA
C669 0.01u B
C672 0.01u B
C673 0.01u B
C674 0.01u B
C675 10u 6.3V TAA
R651 22k
R650 22k
R653 22k
R652 22k
R655 22k
R654 22k
R656 33
R659 10k
R658 10k
R661 470k
R660 470k
R663 470k
R662 470k
R689 0
R688 0
R667 10k
R664 10k
R669 15k
R668 15k
R666 1M
R665 1M
R670 100k
R672 100k
R682 39k
R683 68k
R684 39k
R685 68k
R673 1k
R674 100k
R675 1k
R676 1M
VISTA-SO
VISTA-SI
CGV
PE1/INT2
PE2/PWM0
PE3/PWM1
PF0/AN0
PF1/AN1
PF2/AN2
LIBERO STBY
PF4/AN4
PF5/AN5
PF6/AN6
PF7/AN7
AVDD
AVREF
VISTA-SCK
PA7
PA6
CS-ADC
CS-ZTG
NC
VDD
VSS
CS ZVISTA
PA2
PA1
PA0
PB7
PB6
PB5
PB4
PB3
ADC-STBY
C-RESET
PB0
FLD
PC6
PC5
PC4
PC3
PC2
PC1
PC0
PD7
PD6
AVSS
SCKO
SOO
SIO
CSO
RST
VSS
EXTAL
XTAL
MP
PD0
PD1
PD2
PD3
PD4
PD5
(CAM SCK)
(CAM SI)
(CAM SO)
CS LIBERO
CN650 18P
1 VISTA 3V
2 GND
3 GND
4 DIG 5V
5
6 VISTA SCK
7 VISTA SO
8 CS ZTG
9 CS ZVISTA
10 CLK
11 FLD
12 VD
13 MV RESET
14 MEC SCK
15 MEC SO
16 MEC SI
17 CS VISTA
18 MV STBY
TO
VC-167P
BOARD
CN702
(SEE PAGE 4-15)
A1
A2
A3
A4
A5
C1
C2
C3
C4
C5
C6
C8
C9
C10
①
②

TZ-5 BOARD

① IC655 ㉔ REC

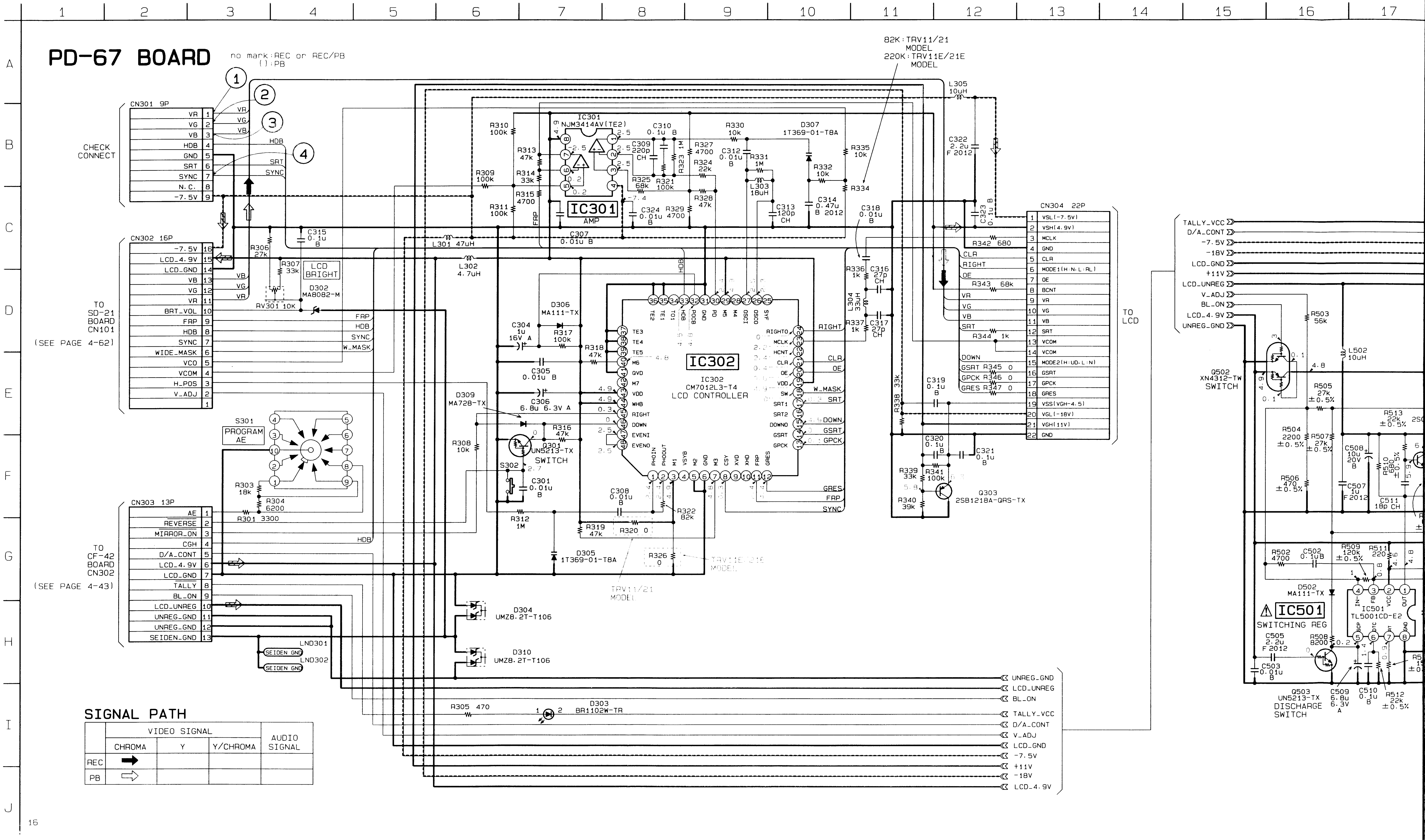


② IC650 ① REC



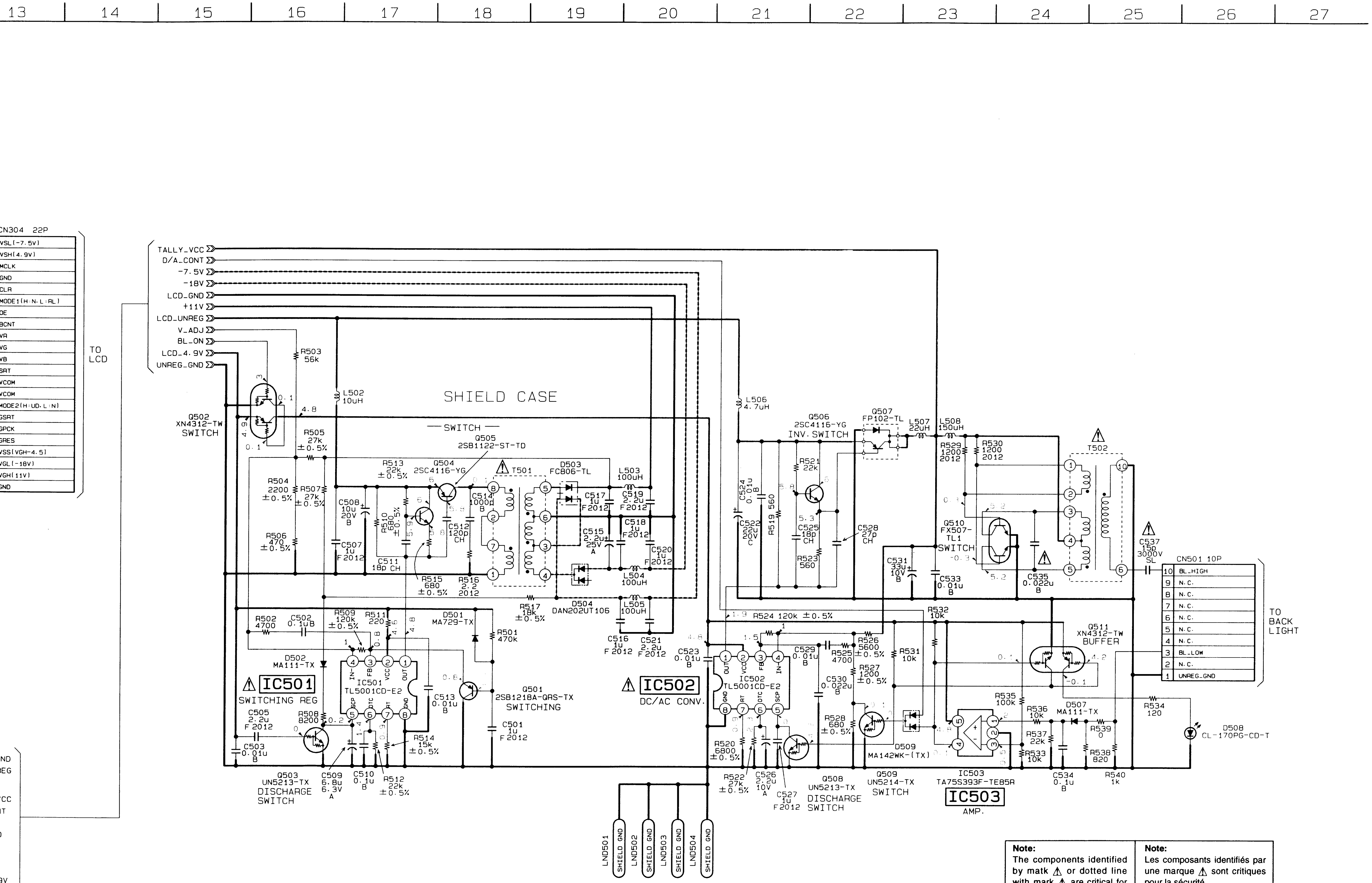
PD-67 (LCD) SCHEMATIC DIAGRAM

— Ref. No. : PD-67 Board; 8,000 Series —

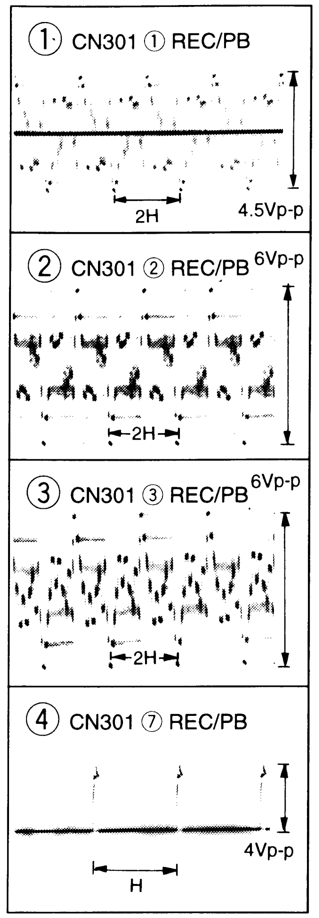

PD-67 BOARD
no mark : REC or REC/PB
( ) : PB
CN301 9P
CHECK CONNECT
CN302 16P
TO SD-21 BOARD CN101
(SEE PAGE 4-62)
CN303 13P
TO CF-42 BOARD CN302
(SEE PAGE 4-43)
IC301 NJM3414AV(TE2)
IC301 AMP
IC302 CM7012L3-T4 LCD CONTROLLER
S301 PROGRAM AE
RV301 10K
LCD BRIGHT
D302 MA8082-M
D306 MA111-TX
D309 MA728-TX
Q301 UN5213-TX SWITCH
S302
D305 1T369-01-T8A
D304 UMZ8.2T-T106
D310 UMZ8.2T-T106
D303 BR1102W-TR
D307 1T369-01-T8A
L301 47uH
L302 4.7uH
L303 18uH
L304 33uH
L305 10uH
Q303 2SB1218A-QRS-TX
82K : TRV11/21 MODEL
220K : TRV11E/21E MODEL
TRV11/21 MODEL
TRV11E/21E MODEL
CN304 22P
TO LCD
LND301
LND302
SEIDEN GND
Q502 XN4312-TW SWITCH
L502 10uH
D502 MA111-TX
IC501 TL5001CD-E2
IC501 SWITCHING REG
Q503 UN5213-TX DISCHARGE SWITCH
TALLY_VCC
D/A_CONT
-7.5V
-18V
LCD_GND
+11V
LCD_UNREG
V_ADJ
BL_ON
LCD_4.9V
UNREG_GND
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡			
PB	⇨			


13
14
15
16
17
18
19
20
21
22
23
24
25
26
27
CN304 22P
TO LCD
TALLY_VCC
D/A_CONT
-7.5V
-18V
LCD_GND
+11V
LCD_UNREG
V_ADJ
BL_ON
LCD_4.9V
UNREG_GND
SHIELD CASE
SWITCH
Q502 XN4312-TW SWITCH
Q505 2SB1122-ST-TD
Q504 2SC4116-YG
T501
D503 FC806-TL
L502 10uH
L503 100uH
L504 100uH
L505 100uH
D504 DAN202UT106
D501 MA729-TX
D502 MA111-TX
IC501
TL5001CD-E2
SWITCHING REG
Q501 2SB1218A-QRS-TX SWITCHING
Q503 UN5213-TX DISCHARGE SWITCH
IC502
TL5001CD-E2
DC/AC CONV.
L506 4.7uH
Q506 2SC4116-YG INV. SWITCH
Q507 FP102-TL
L507 22uH
L508 150uH
T502
Q510 FX507-TL1 SWITCH
R524 120k ±0.5%
Q511 XN4312-TW BUFFER
D507 MA111-TX
D508 CL-170PG-CD-T
Q508 UN5213-TX DISCHARGE SWITCH
Q509 UN5214-TX SWITCH
D509 MA142WK-(TX)
IC503 TA75S393F-TE85R
IC503 AMP.
C537 15p 3000V SL
CN501 10P
10 BL_HIGH
9 N.C.
8 N.C.
7 N.C.
6 N.C.
5 N.C.
4 N.C.
3 BL_LOW
2 N.C.
1 UNREG_GND
TO BACK LIGHT
LND501 SHIELD GND
LND502 SHIELD GND
LND503 SHIELD GND
LND504 SHIELD GND

PD-67 BOARD



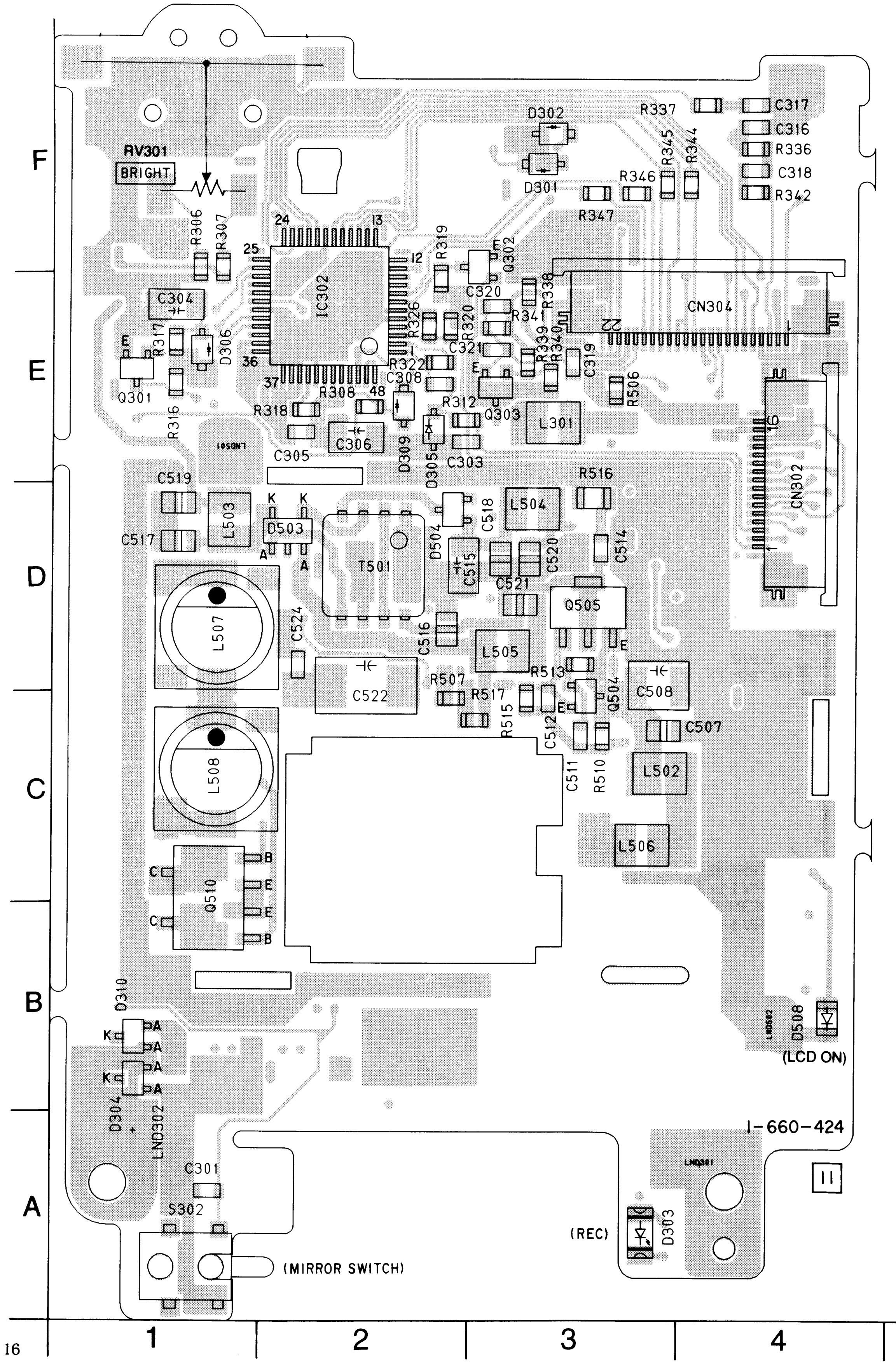
Note:	**Note:**
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

PD-67 (LCD) PRINTED WIRING BOARD

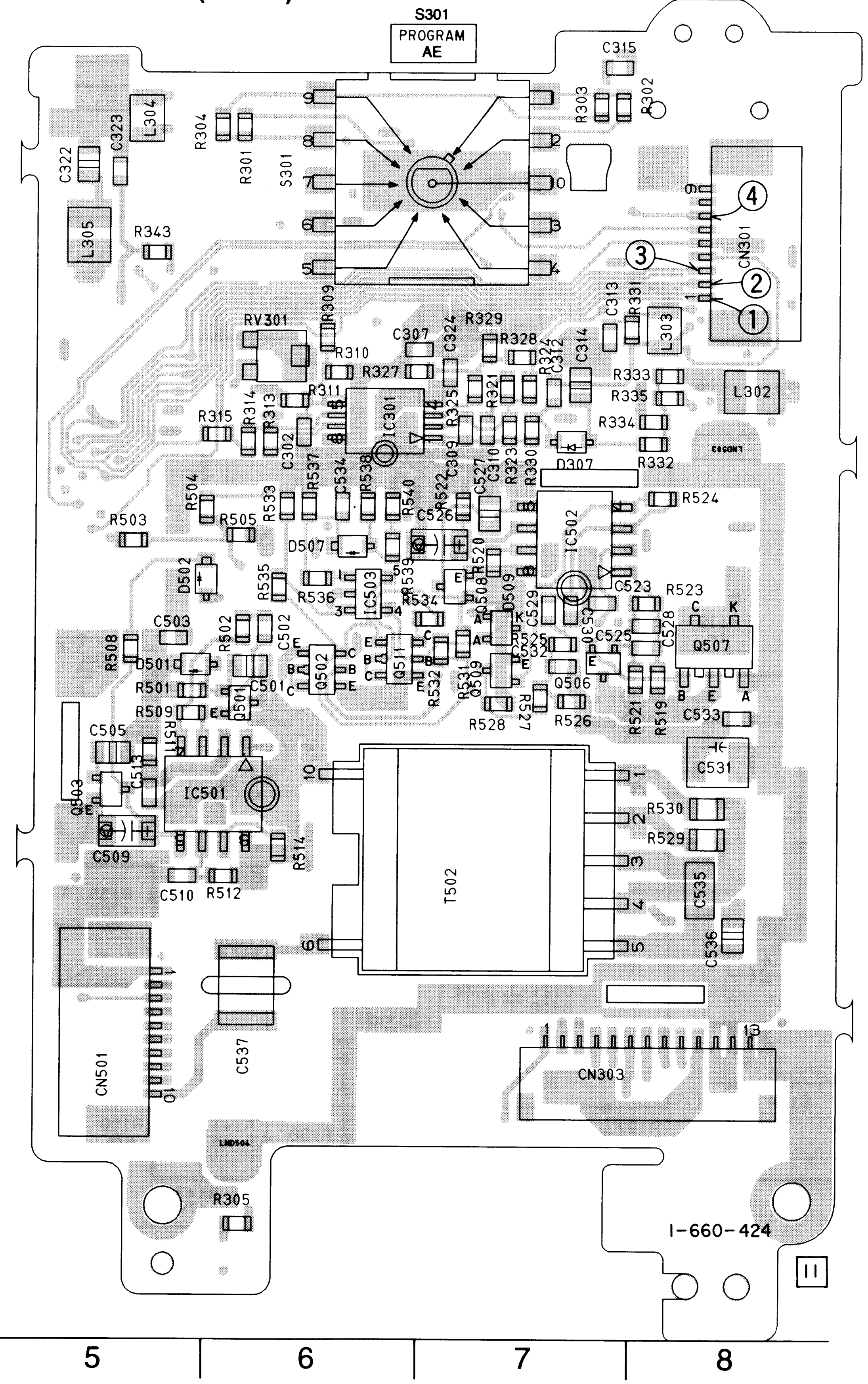
— Ref. No. : PD-67 Board; 8,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

PD-67 BOARD (SIDE A)

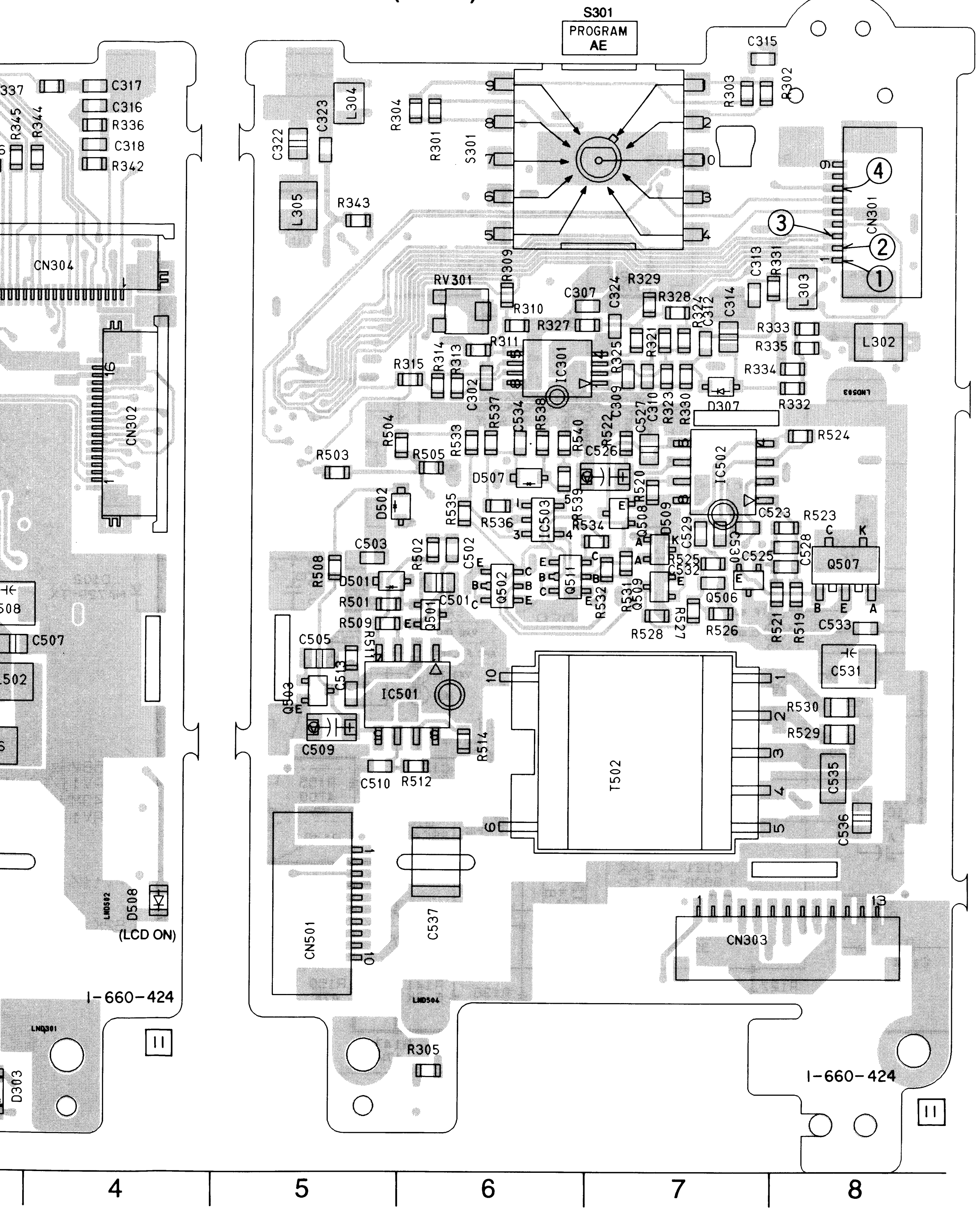

F
E
D
C
B
A
1
2
3
4
RV301
BRIGHT
R306
R307
C304
R317
D306
Q301
R316
R318
IC302
24
13
25
12
36
37
48
1
R319
Q302
C320
R326
R320
R322
C308
C321
R308
R312
Q303
C306
C305
D309
D305
C303
L301
R341
R338
R339
R340
C319
CN304
22
1
R506
D302
D301
R337
R345
R344
R346
R347
C317
C316
R336
C318
R342
CN302
16
C519
C517
L503
D503
K
A
T501
D504
C515
C518
L504
C520
C521
R516
C514
L507
C524
C516
Q505
C522
L505
R513
R507
R517
R515
C512
Q504
C508
C507
C511
R510
L502
L508
L506
Q510
C
B
E
D310
D304
LND302
D508
(LCD ON)
LND301
C301
S302
(MIRROR SWITCH)
(REC)
D303
1-660-424
11

PD-67 BOARD (SIDE B)


S301
PROGRAM AE
5
6
7
8
C315
R302
R303
C322
C323
L304
R304
R301
S301
L305
R343
CN301
①
②
③
④
RV301
R309
R310
C307
C324
R329
R328
C313
R331
L303
C314
R327
R311
IC301
R325
R321
R333
R335
L302
R315
R314
R313
C302
R537
C534
R538
C309
C310
R323
R330
D307
R334
R332
R504
R533
R540
R522
C527
C526
IC502
R524
R503
R505
D507
D502
R535
R536
IC503
R539
R534
R520
D508
D509
C529
C530
C523
R523
C528
Q507
C503
R508
R502
C502
D501
R501
R509
Q501
C501
Q502
Q511
R532
R531
Q509
R525
R527
R528
C532
C525
Q506
R526
R521
R519
C533
C531
C505
R511
C513
IC501
Q503
C509
C510
R512
R514
T502
R530
R529
C535
C536
CN501
C537
CN303
13
LND504
R305
1-660-424
11

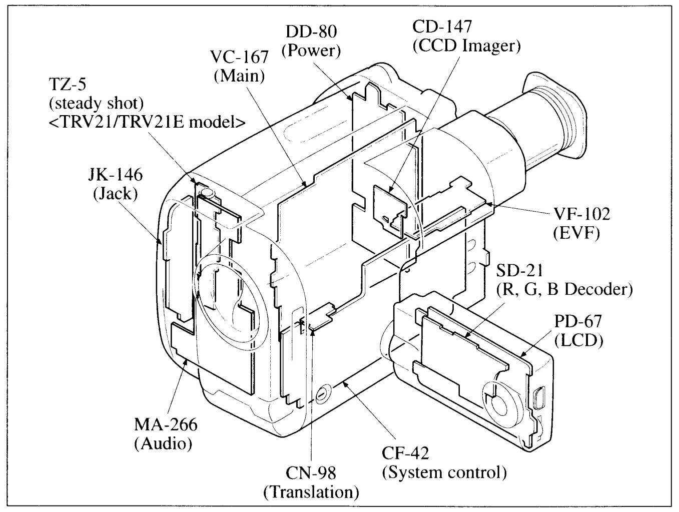
m isn't mounted in this model.

PD-67 BOARD (SIDE B)


S301
PROGRAM AE
C315
R302
R303
L304
C323
C322
R304
R301
S301
L305
R343
CN301
①
②
③
④
CN304
RV301
R309
C307
R329
R328
R324
C312
C314
C313
R331
L303
R310
R327
R311
R333
R335
L302
IC301
R315
R314
R313
C302
R537
C324
R325
R321
C309
C310
R323
R330
R334
D307
R332
R504
R533
C534
R538
R540
R522
C527
C526
R524
IC502
R503
R505
D507
D502
R535
R536
IC503
R534
R539
Q508
D509
C529
C530
C523
R523
C528
Q507
C503
R502
C502
Q502
Q511
Q509
R525
R532
R531
C525
R508
D501
R501
C501
R509
R511
R528
R527
R526
R521
R519
C533
C531
C505
C513
IC501
Q503
C509
C510
R512
R514
T502
R530
R529
C535
C536
CN302
CN501
C537
CN303
C317
C316
R336
C318
R342
R345
R344
C507
C508
D508
(LCD ON)
D303
R305
1-660-424
II
4
5
6
7
8

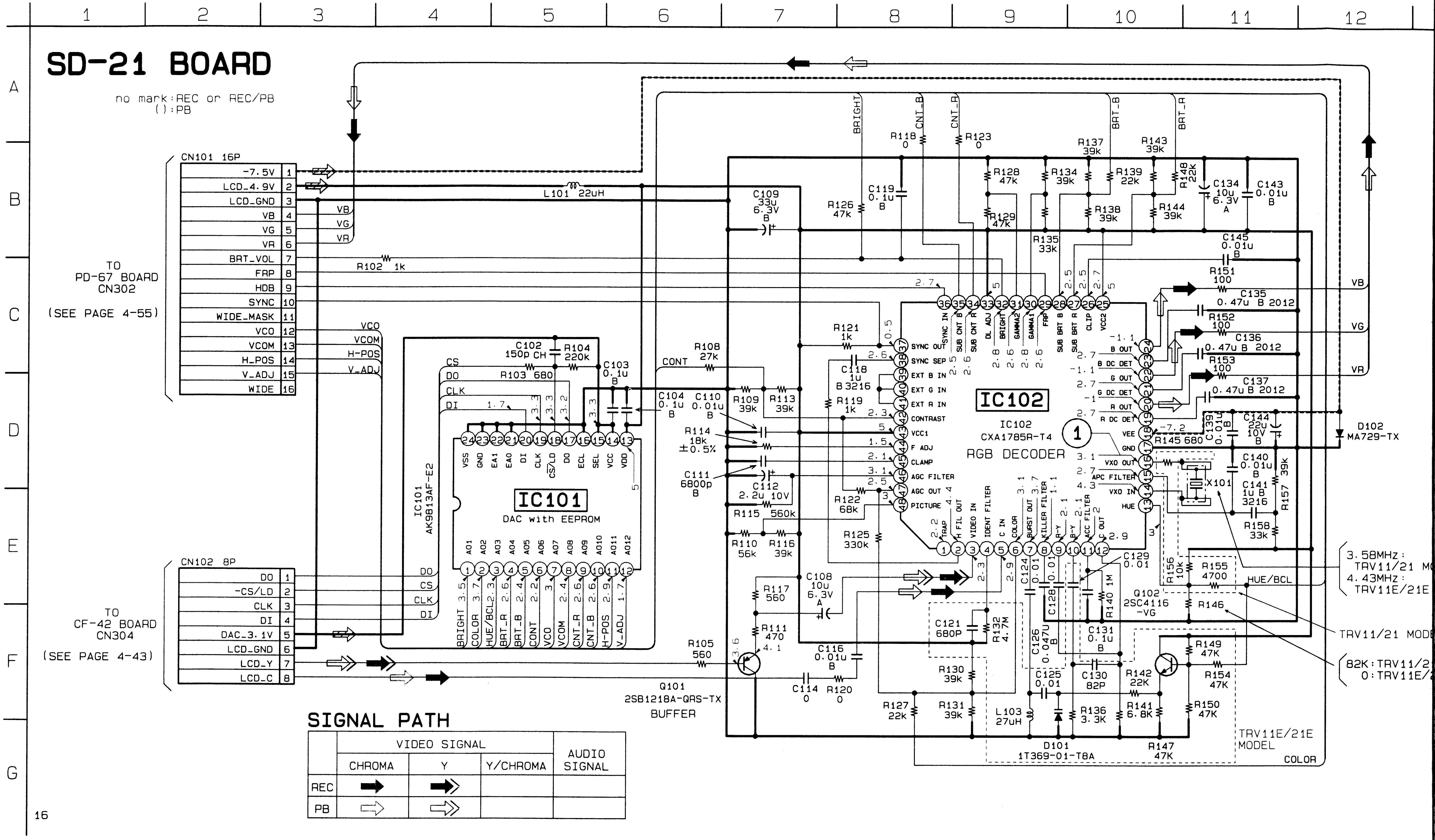
PD-67 BOARD

C301	A–1	C524	D–2	L302	E–8	R318	E–2	R515	C–3
C304	E–1	C525	D–8	L303	E–7	R319	F–2	R516	D–3
C305	E–2	C526	E–7	L304	F–5	R320	E–3	R517	C–2
C306	E–2	C527	E–7	L305	F–5	R321	E–7	R519	C–8
C307	E–7	C528	D–8	L502	C–3	R322	E–2	R520	D–7
C308	E–2	C529	D–7	L503	D–1	R323	E–7	R521	C–8
C309	E–7	C530	D–7	L504	D–3	R324	E–7	R522	D–7
C310	E–7	C531	C–8	L505	D–3	R325	E–7	R523	D–8
C312	E–7	C533	D–8	L506	C–3	R327	E–6	R524	D–8
C313	E–8	C534	D–6	L507	D–1	R328	E–7	R525	C–7
C314	E–7	C535	C–8	L508	C–1	R329	E–7	R526	C–7
C315	F–8	C537	B–6			R330	E–7	R527	C–7
C316	F–4			Q301	E–1	R331	E–8	R528	C–7
C317	F–4	CN301	F–8	Q303	E–3	R332	E–8	R529	C–8
C318	F–4	CN302	E–4	Q501	C–6	R334	E–8	R530	C–8
C319	E–3	CN303	B–7	Q502	D–6	R335	E–8	R531	C–7
C320	F–3	CN304	E–4	Q503	C–5	R336	F–4	R532	C–7
C321	E–3	CN501	B–5	Q504	C–3	R337	F–4	R533	D–6
C322	F–5			Q505	D–3	R338	E–3	R534	D–6
C323	F–5	D302	F–3	Q506	C–7	R339	E–3	R535	D–6
C324	E–7	D303	A–3	Q507	D–8	R340	E–3	R536	D–6
C501	D–6	D304	B–1	Q508	D–7	R341	E–3	R537	D–6
C502	D–6	D305	E–2	Q509	C–7	R342	F–4	R538	D–6
C503	D–5	D306	E–1	Q510	C–1	R343	F–5	R539	D–6
C505	C–5	D307	E–7	Q511	D–6	R344	F–4	R540	D–7
C507	C–3	D309	E–2			R345	F–4		
C508	D–4	D310	B–1	R301	F–6	R346	F–4	RV301	E–6
C509	C–5	D501	D–5	R303	F–7	R347	F–3		
C510	C–5	D502	D–5	R304	F–6	R501	D–5	S301	F–7
C511	C–3	D503	E–2	R305	A–6	R502	D–6	S302	A–1
C512	C–3	D504	D–3	R306	F–1	R503	D–5		
C513	C–5	D507	D–6	R307	F–1	R504	D–6	T501	D–2
C514	D–3	D508	B–4	R308	E–2	R505	D–6	T502	C–7
C515	D–3	D509	D–7	R309	E–6	R506	E–3		
C516	D–3			R310	E–6	R507	D–2		
C517	D–1	IC301	E–6	R311	E–6	R508	D–5		
C518	D–3	IC302	E–2	R312	E–3	R509	C–5		
C519	D–1	IC501	C–6	R313	E–6	R510	C–3		
C520	D–3	IC502	D–7	R314	E–6	R511	C–5		
C521	D–3	IC503	D–6	R315	E–6	R512	C–6		
C522	D–2			R316	E–1	R513	D–3		
C523	D–8	L301	E–3	R317	E–1	R514	C–6		


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

SD-21 (R.G.B DECODER) SCHEMATIC DIAGRAMS

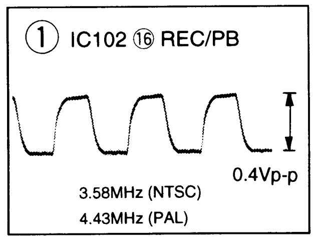
— Ref. No. : SD-21 Board; 8,000 Series —

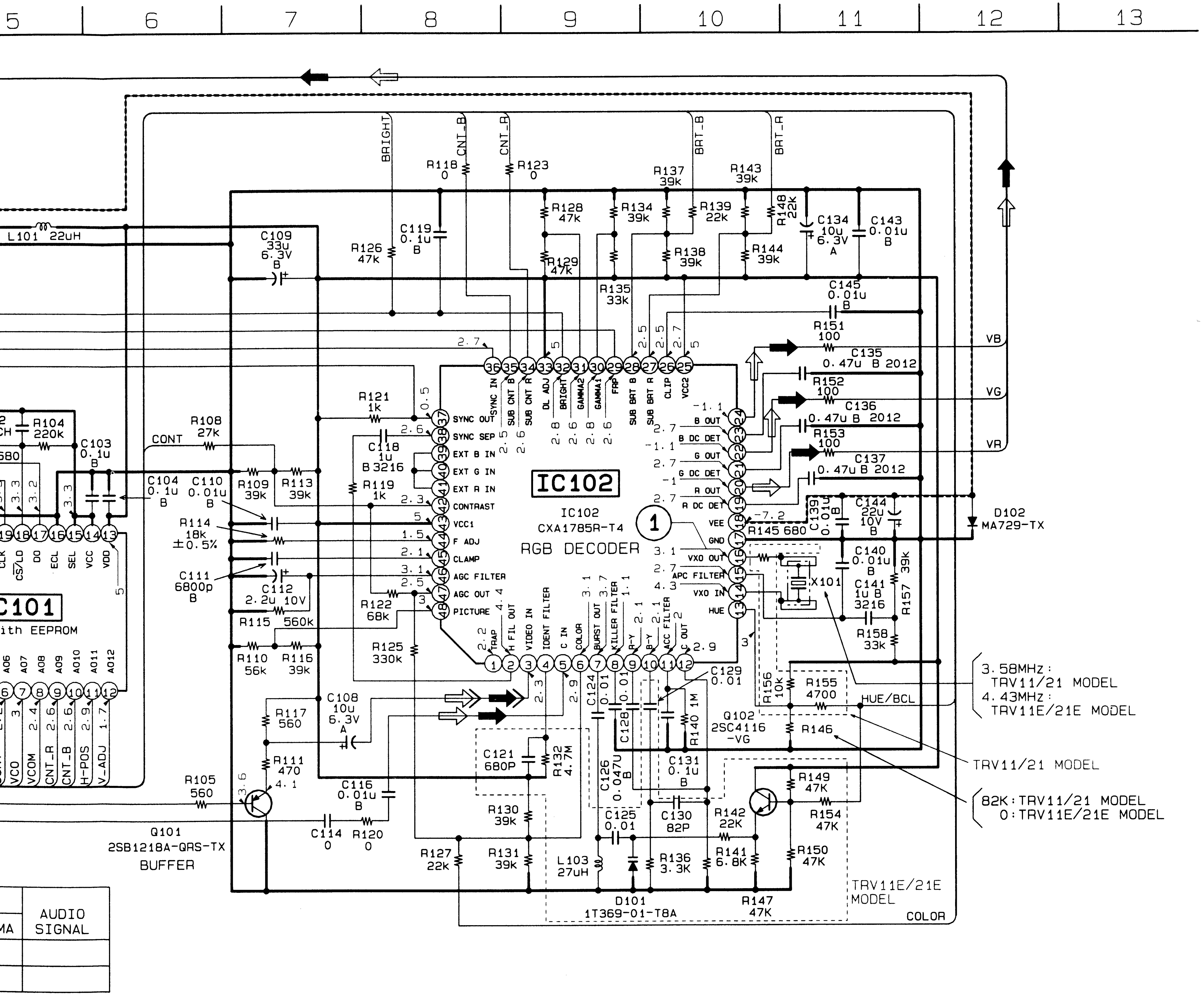

SD-21 BOARD
no mark:REC or REC/PB
( ):PB
CN101 16P
-7.5V 1
LCD_4.9V 2
LCD_GND 3
VB 4
VG 5
VR 6
BRT_VOL 7
FRP 8
HDB 9
SYNC 10
WIDE_MASK 11
VCO 12
VCOM 13
H_POS 14
V_ADJ 15
WIDE 16
TO PD-67 BOARD CN302
(SEE PAGE 4-55)
CN102 8P
DO 1
-CS/LD 2
CLK 3
DI 4
DAC_3.1V 5
LCD_GND 6
LCD_Y 7
LCD_C 8
TO CF-42 BOARD CN304
(SEE PAGE 4-43)
L101 22uH
IC101
AK9813AF-E2
DAC with EEPROM
IC102
CXA1785R-T4
RGB DECODER
Q101
2SB1218A-QRS-TX
BUFFER
Q102
2SC4116-VG
D101
1T369-01-T8A
D102
MA729-TX
X101
3.58MHz: TRV11/21 M
4.43MHz: TRV11E/21E
TRV11/21 MODE
(82K:TRV11/2
0:TRV11E/
TRV11E/21E MODEL
HUE/BCL
COLOR
VB
VG
VR
BRIGHT
CNT_B
CNT_R
BRT_B
BRT_R
CONT
16

SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡		
PB	⇨	⇨		

SD-21 BOARD


① IC102 ⑯ REC/PB
0.4Vp-p
3.58MHz (NTSC)
4.43MHz (PAL)

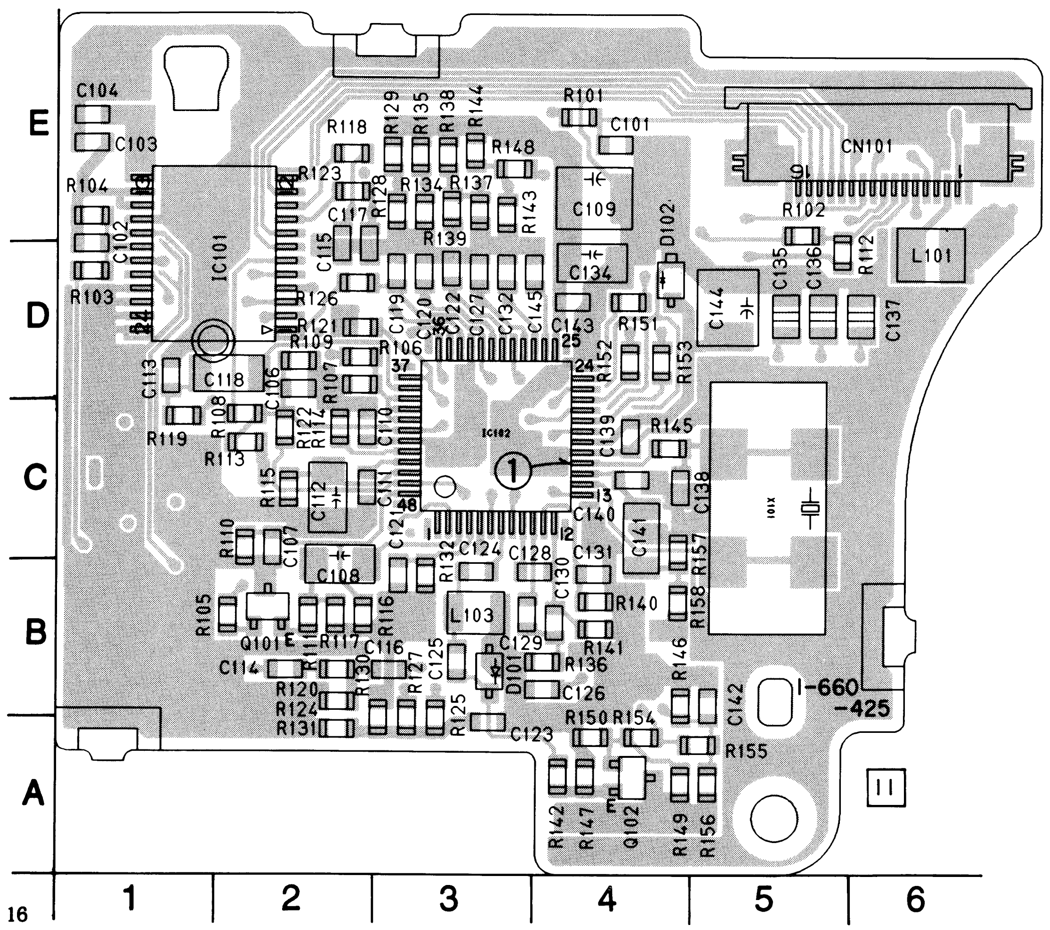

5
6
7
8
9
10
11
12
13
BRIGHT
CNT_B
CNT_R
BRT_B
BRT_R
R118 0
R123 0
R137 39k
R143 39k
R128 47k
R134 39k
R139 22k
R148 22k
C134 10u 6.3V A
C143 0.01u B
L101 22uH
C109 33u 6.3V B
C119 0.1u B
R126 47k
R129 47k
R138 39k
R144 39k
R135 33k
C145 0.01u B
R151 100
C135 0.47u B 2012
R152 100
C136 0.47u B 2012
R153 100
C137 0.47u B 2012
VB
VG
VR
R121 1k
C118 1u B3216
R119 1k
R108 27k
CONT
R104 220k
C103 0.1u B
C104 0.1u B
C110 0.01u B
R109 39k
R113 39k
R114 18k ±0.5%
C111 6800p B
C112 2.2u 10V
R115 560k
R122 68k
R125 330k
R110 56k
R116 39k
IC101
with EEPROM
IC102
IC102
CXA1785R-T4
RGB DECODER
SYNC IN
SUB CNT B
SUB CNT R
DL ADJ
BRIGHT
GAMMA2
GAMMA1
FRP
SUB BRT B
SUB BRT R
CLIP
VCC2
SYNC OUT
SYNC SEP
EXT B IN
EXT G IN
EXT R IN
CONTRAST
VCC1
F ADJ
CLAMP
AGC FILTER
AGC OUT
PICTURE
B OUT
B DC DET
G OUT
G DC DET
R OUT
R DC DET
VEE
GND
VXO OUT
APC FILTER
VXO IN
HUE
TRAP
H FIL OUT
VIDEO IN
IDENT FILTER
C IN
COLOR
BURST OUT
KILLER FILTER
R-Y
B-Y
ACC FILTER
C OUT
C139 0.01u B
C144 22u 10V B
R145 680
C140 0.01u B
C141 1u B 3216
R157 39k
R158 33k
X101
D102 MA729-TX
R156 10k
R155 4700
HUE/BCL
C129 0.01
C124 0.01
C128 0.01
R140 1M
Q102 2SC4116 -VG
R146
C126 0.047U B
C131 0.1u B
R149 47K
R154 47K
C130 82P
R142 22K
C125 0.01
R136 3.3K
R141 6.8K
R150 47K
L103 27uH
D101 1T369-01-T8A
R147 47K
TRV11E/21E MODEL
COLOR
R117 560
C108 10u 6.3V A
R111 470
C121 680P
R132 4.7M
C116 0.01u B
R105 560
C114 0
R120 0
R130 39K
R131 39K
R127 22k
Q101 2SB1218A-QRS-TX
BUFFER
CLK
CS/LD
DO
ECL
SEL
VCC
VDD
A06
A07
A08
A09
A010
A011
A012
VCO
VCOM
CNT_R
CNT_B
H-POS
V_ADJ
3.58MHz: TRV11/21 MODEL
4.43MHz: TRV11E/21E MODEL
TRV11/21 MODEL
82K: TRV11/21 MODEL
0: TRV11E/21E MODEL
AUDIO SIGNAL

SD-21 (R.G.B DECODER) PRINTED WIRING BOARD

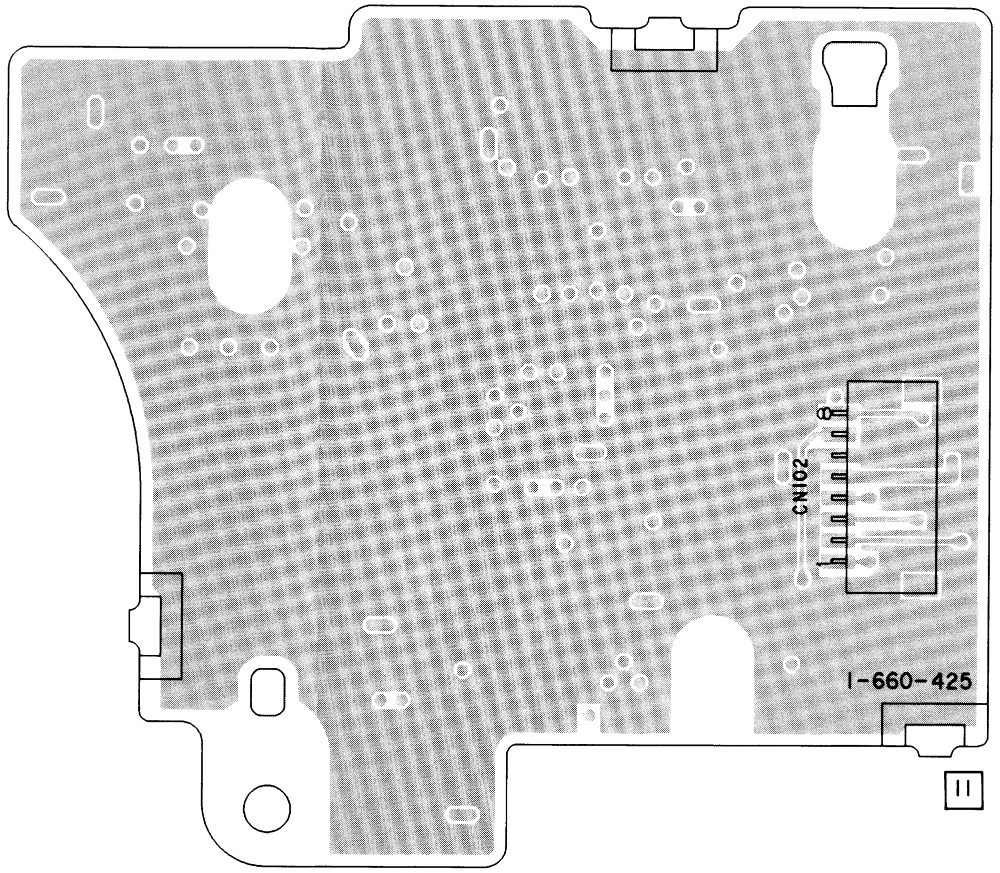
— Ref. No. : SD-21 Board; 8,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

SD-21 BOARD (SIDE A)

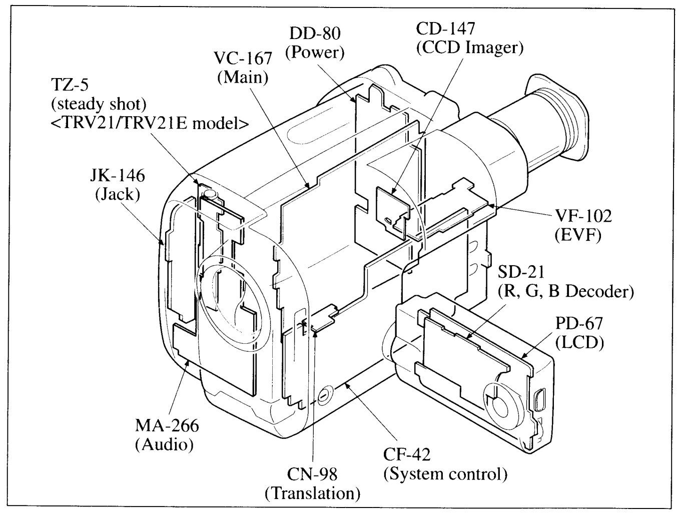

E
D
C
B
A
1
2
3
4
5
6
16
IC101
IC102
CN101
L101
L103
Q101
Q102
D101
D102
X101
1-660-425

SD-21 BOARD (SIDE B)


CN102
1-660-425

SD-21 BOARD

C102	E–1	D102	D–4	R129	E–3
C103	E–1			R130	B–2
C104	E–1	IC101	D–2	R131	A–2
C108	B–2	IC102	C–3	R132	B–3
C109	E–4			R134	E–3
C110	C–3	L101	D–6	R135	E–3
C111	C–3	L103	B–3	R136	B–4
C112	C–2			R137	E–3
C114	B–2	Q101	B–2	R138	E–3
C116	B–3	Q102	A–4	R139	D–3
C118	D–2			R140	B–4
C119	D–3	R102	E–5	R141	B–4
C121	B–3	R103	D–1	R142	A–4
C124	B–3	R104	E–1	R143	D–4
C125	B–3	R105	B–2	R144	E–3
C126	B–4	R108	C–2	R145	C–4
C128	B–4	R109	D–2	R146	B–5
C129	B–3	R110	C–2	R147	A–4
C130	B–4	R111	B–2	R148	E–3
C131	B–4	R113	C–2	R149	A–4
C134	D–4	R114	C–2	R150	A–4
C135	D–5	R115	C–2	R151	D–4
C136	D–5	R116	B–3	R152	D–4
C137	D–6	R117	B–2	R153	D–4
C139	E–4	R118	E–2	R154	A–4
C140	C–4	R119	C–1	R155	A–5
C141	C–4	R120	B–2	R156	A–5
C143	D–4	R121	D–2	R157	C–5
C144	D–5	R122	C–2	R158	B–5
C145	D–4	R123	E–2		
		R125	B–3	X101	C–5
CN101	E–6	R126	D–2		
		R127	B–3		
D101	B–3	R128	E–3		


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

SECTION 5
REPAIR PARTS LIST

5-1. EXPLODED VIEWS

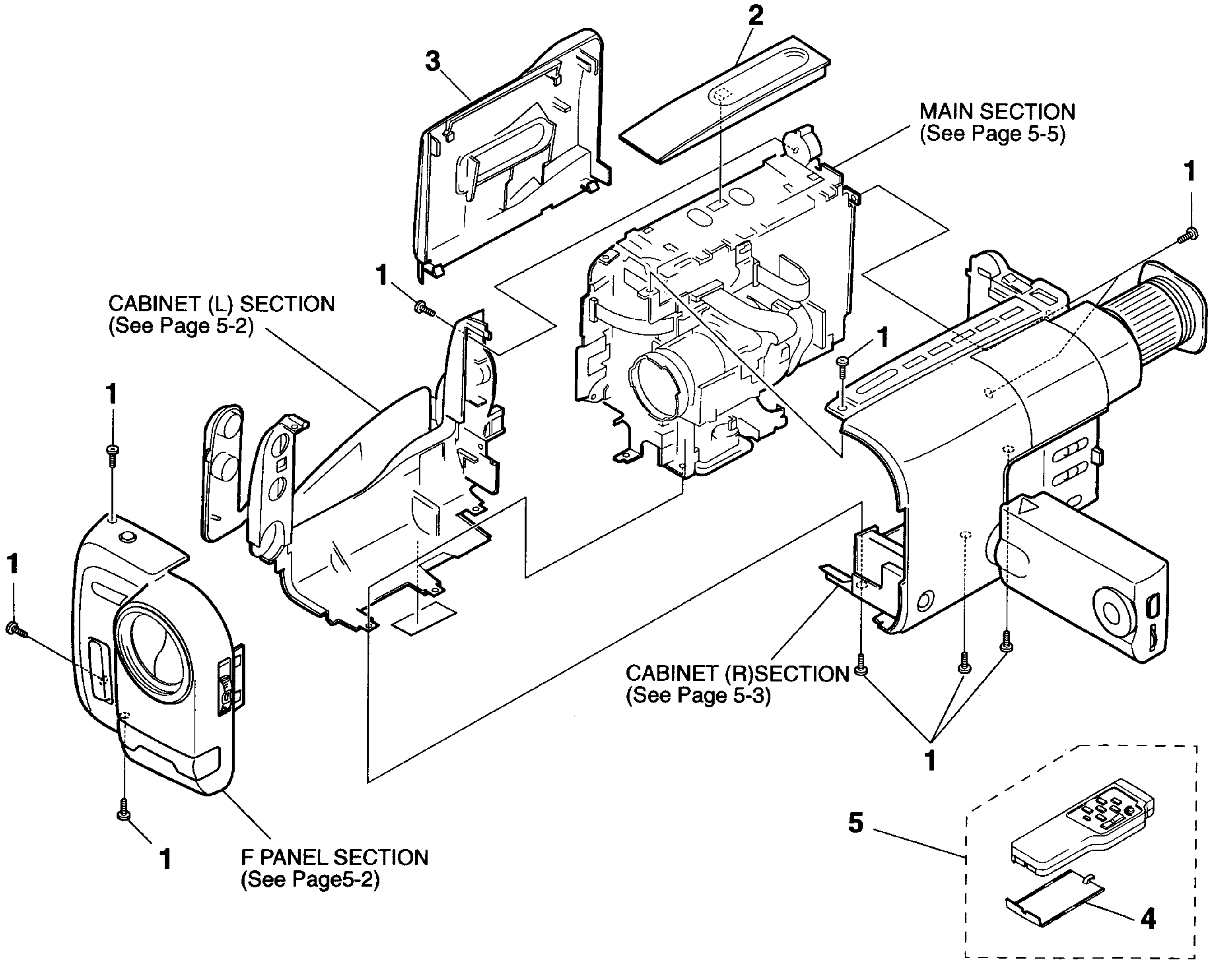
NOTE:

- -XX, -X mean standardized parts, so they may have some differences from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

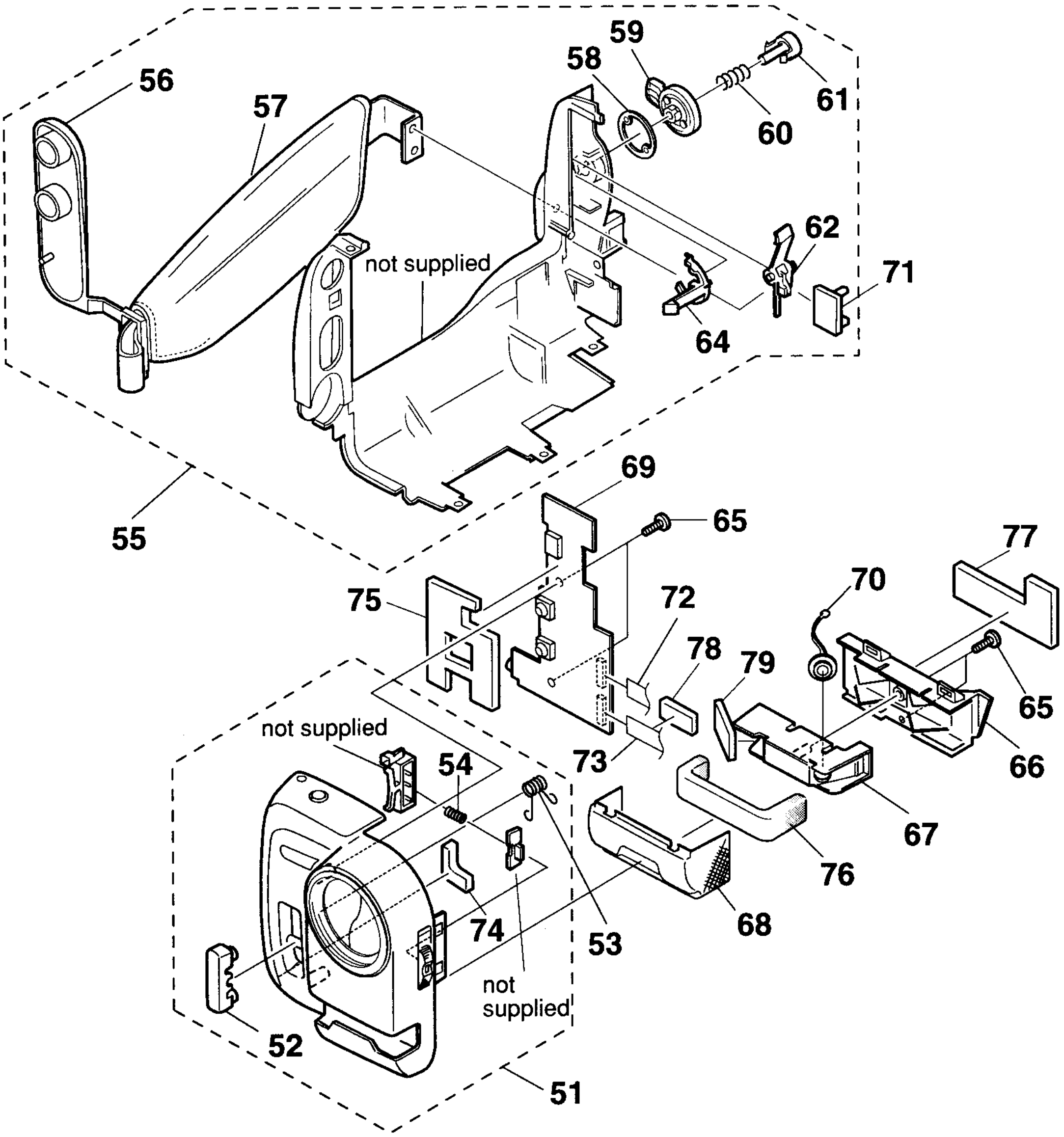
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

5-1-1. OVERALL SECTION


2
3
MAIN SECTION
(See Page 5-5)
1
1
CABINET (L) SECTION
(See Page 5-2)
1
1
1
CABINET (R)SECTION
(See Page 5-3)
1
5
1
F PANEL SECTION
(See Page5-2)
4

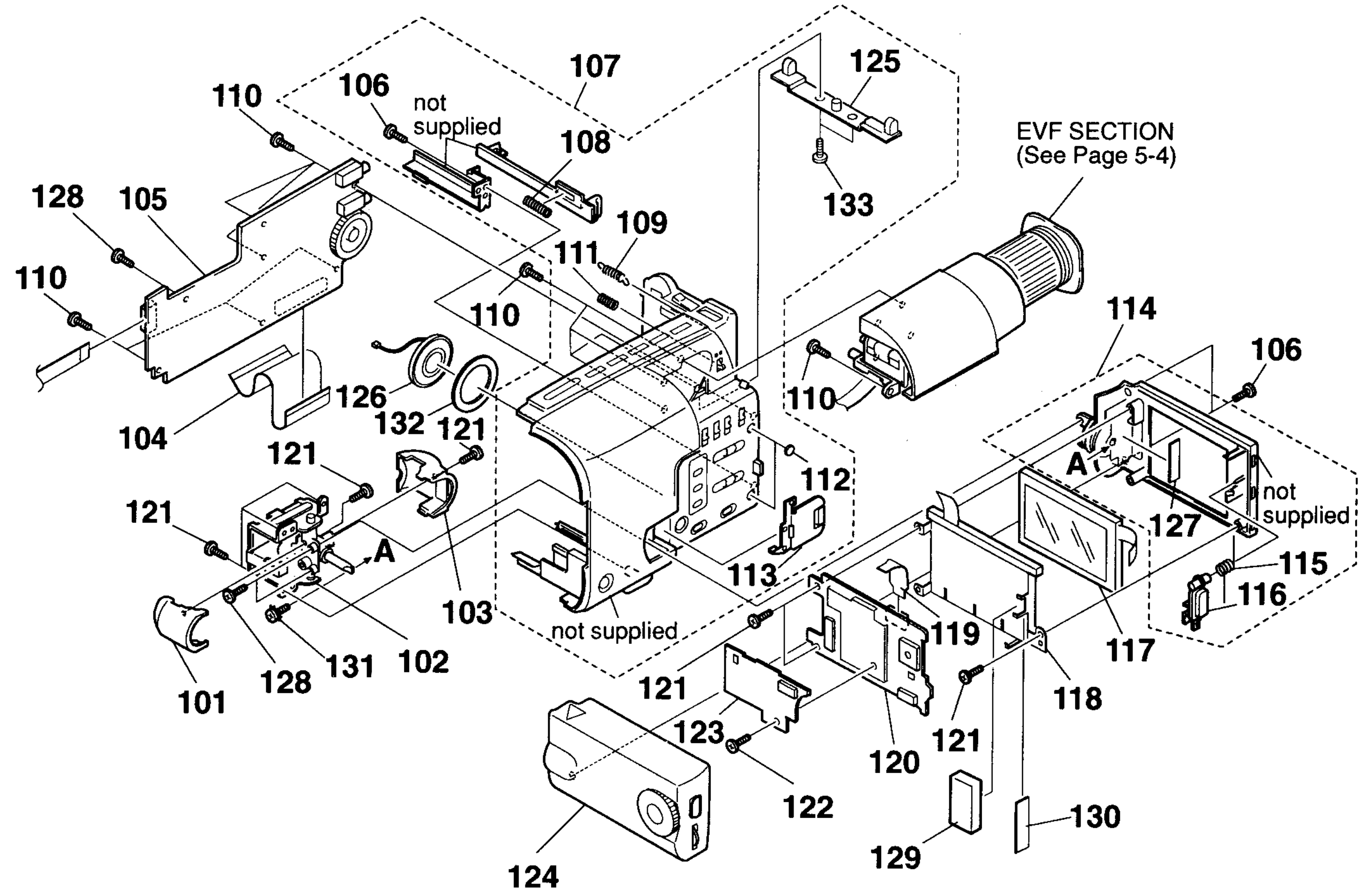
Ref. No.	Part No.	Description	Remarks
1	3-962-826-01	SCREW (2X4)	
2	3-965-896-01	LID, LS	
3	X-3945-446-1	LID ASSY, CASSETTE	
4	3-958-131-01	COVER, BATTERY REMOCON	
5	1-473-342-11	REMOTE COMMANDER (RMT-713)	

5-1-2. CABINET (L), F PANEL SECTION


59
58
56
57
61
60
62
71
not supplied
64
55
69
65
77
75
72
70
78
79
65
66
not supplied
54
73
67
76
68
74
53
not
supplied
52
51

Ref. No.	Part No.	Description	Remarks
51	X-3946-006-1	PANEL ASSY, FRONT (TRV11/TRV11E)	
51	X-3946-324-1	PANEL ASSY, FRONT (TRV21/TRV21E)	
52	3-968-896-01	KEY, FRONT ZOOM	
53	3-968-898-01	SPRING, L COVER	
54	3-303-973-01	SPRING, COMPRESSION	
55	X-3945-455-1	CABINET (L) ASSY	
56	3-965-888-01	COVER, JACK	
57	3-736-807-01	BELT, GRIP	
58	3-736-364-01	SPRING	
59	3-942-985-01	KNOB, STAND-BY	
60	3-965-830-01	SPRING, COMPRESSION	
61	3-965-844-01	BUTTON, S/S	
62	3-965-870-01	PLATE, S/S JOINT	
64	3-965-869-01	HOLDER, KNOB	
65	3-948-339-01	SCREW, TAPPING B2X5	
66	X-3946-290-1	HOLDER (B) ASSY, MICROPHONE	
67	3-968-911-01	HOLDER (A), MICROPHONE	
68	3-968-910-01	GRILLE, MICROPHONE	
69	A-7072-497-A	MA-266 BOARD, COMPLETE	
70	1-542-259-11	MICROPHONE, CAP	
71	3-942-895-01	STOPPER, BELT	
72	1-776-862-11	CABLE, FLEXIBLE FLAT 9P	
73	1-776-861-11	CABLE, FLEXIBLE FLAT 8P	
* 74	3-970-733-01	CUSHION (C), MICROPHONE	
* 75	3-970-730-01	CUSHION, MA	
* 76	3-968-913-01	CUSHION, MICROPHONE	
* 77	3-970-732-01	CUSHION (B), MICROPHONE	
* 78	3-970-734-01	CUSHION (A), MA	
* 79	3-970-731-01	CUSHION (A), MICROPHONE	

5-1-3. CABINET (R) SECTION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EVF SECTION
(See Page 5-4)
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not supplied
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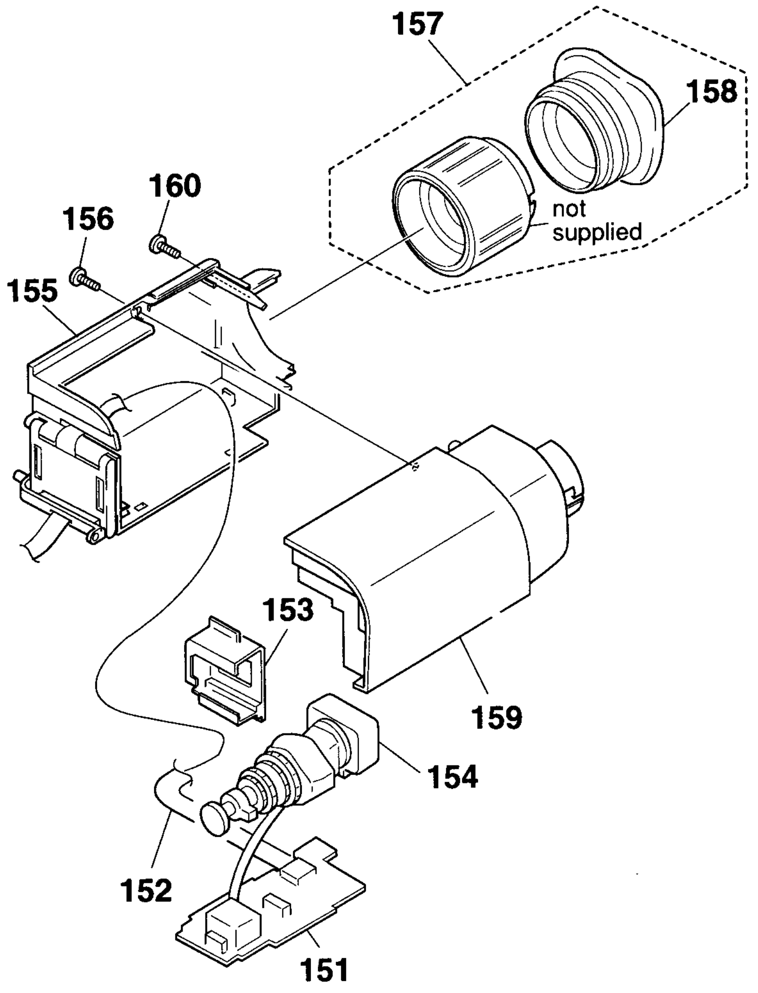
Ref. No.	Part No.	Description	Remarks
101	3-968-914-01	COVER (FRONT), HINGE	
102	X-3945-944-1	HINGE ASSY	
103	3-968-915-01	COVER (REAR), HINGE	
104	1-775-520-11	CABLE, FLEXIBLE FLAT 45P	
105	A-7092-828-A	CF-42 BOARD, COMPLETE(TRV11/TRV11E)	
105	A-7092-829-A	CF-42 BOARD, COMPLETE (TRV21:US,Canadian)	
105	A-7092-830-A	CF-42 BOARD, COMPLETE (TRV21:E,Tourist/TRV21E)	
106	3-948-339-01	SCREW, TAPPING B2X5	
107	X-3946-003-1	CABINET (R) ASSY (TRV11/TRV11E)	
107	X-3946-004-1	CABINET (R) ASSY (TRV21:US,Canadian)	
107	X-3946-005-1	CABINET (R) ASSY (TRV21:E,Tourist/TRV21E:E,Tourist)	
107	X-3946-226-1	CABINET (R) ASSY (TRV21E:AEP,UK)	
108	3-965-846-01	SPRING, COMPRESSION	
109	4-602-490-00	SPRING, TENSION	
110	3-719-601-01	SCREW (B2X5), TAPPING	
111	4-876-347-01	SPRING, COMPRESSION	
112	3-959-978-02	CUSHION, PANEL	
113	3-968-878-01	LID, LITHIUM BATTERY	
114	X-3945-943-1	CABINET (M) ASSY, P	
* 115	3-968-859-01	SPRING, LOCK	
* 116	3-968-856-01	BUTTON, LOCK	
117	1-801-191-11	INDICATOR MODULE, LIQUID CRYST	
⚠118	1-517-524-11	TUBE, FLUORESCENT, COLD CATHODE	
119	1-660-433-11	FP-410 FLEXIBLE BOARD	
120	A-7072-499-A	PD-67 BOARD, COMPLETE (TRV11/TRV21)	
120	A-7072-525-A	PD-67P BOARD, COMPLETE (TRV11E/TRV21E)	
121	3-948-339-11	SCREW, TAPPING B2X5	
122	3-713-786-21	SCREW (M2X3)	
123	A-7072-500-A	SD-21 BOARD, COMPLETE (TRV11/TRV21)	
123	A-7072-526-A	SD-21P BOARD, COMPLETE (TRV11E/TRV21E)	
124	X-3946-007-1	CABINET (C) ASSY, P (TRV11E)	
124	X-3946-008-1	CABINET (C) ASSY, P (TRV21)	
124	X-3946-009-1	CABINET (C) ASSY, P (TRV11)	
124	X-3946-177-1	CABINET (C) ASSY, P (TRV21E)	
125	3-965-854-01	CLAW, BT LOCK	
126	1-505-291-11	SPEAKER (DIA 2.8CM)	
127	3-970-787-01	SHEET, HARNESS	
128	3-948-339-41	SCREW, TAPPING B2X8	
129	3-970-855-01	SHEET (2), LIGHT INTERCEPTION	
130	3-970-856-01	SHEET (3), LIGHT INTERCEPTION	
131	4-628-646-21	SCREW (M2), TOOTHED LOCK (+P)	
132	3-965-367-11	SPACER, SP	
133	3-966-178-01	SCREW (1.7)	

Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified

Note:
Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

5-1-4. EVF SECTION

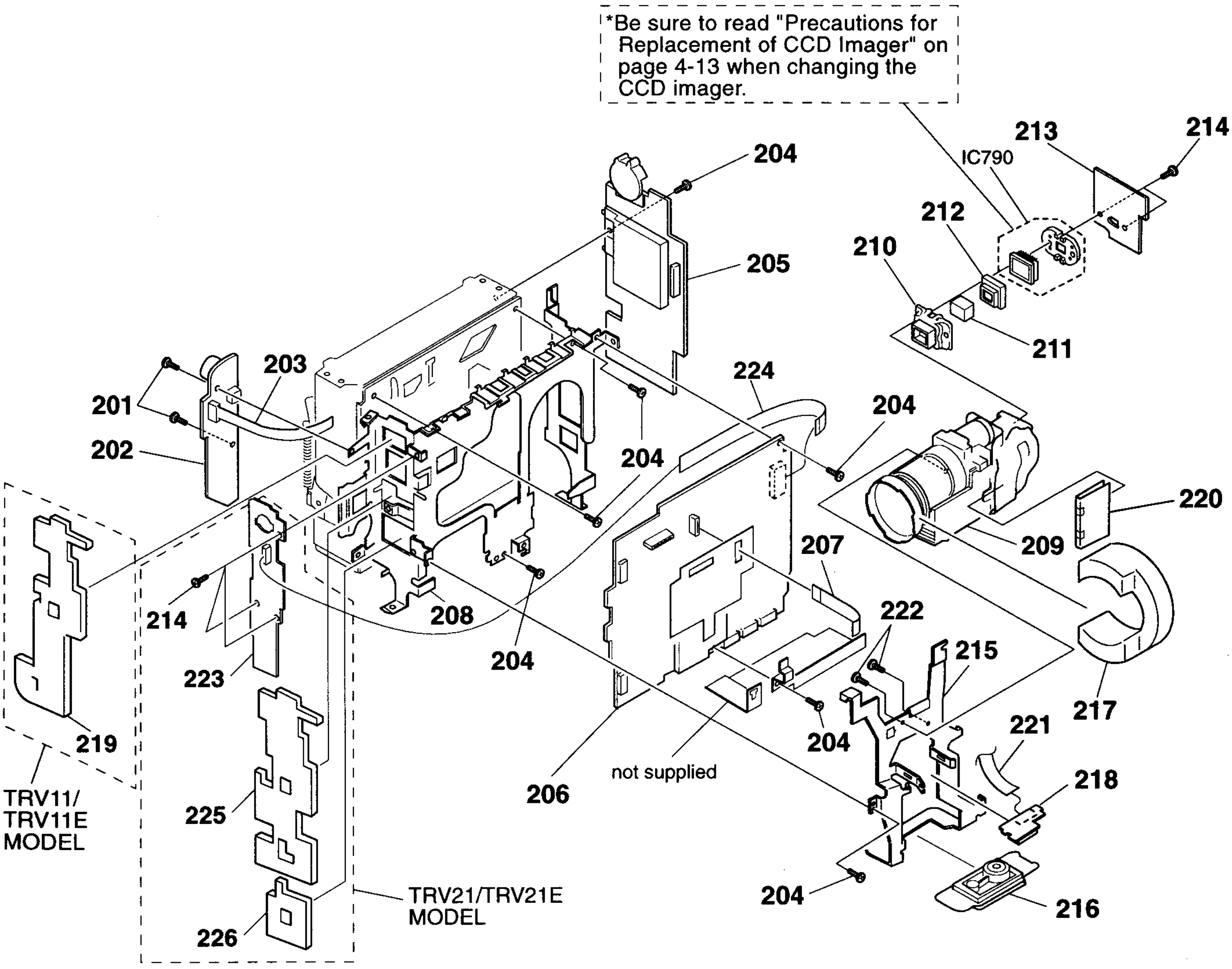


Ref. No.	Part No.	Description	Remarks
151	A-7072-357-A	VF-102P BOARD, COMPLETE	(TRV11E/TRV21E)
151	A-7072-362-A	VF-102 BOARD, COMPLETE	(TRV11/TRV21)
152	1-660-431-11	FP-408 FLEXIBLE BOARD	
153	X-3945-445-1	COVER ASSY, CRT	
⚠154	1-452-673-31	CRT ASSY (M01KXX90WB)	
155	X-3945-947-1	CABINET (L) ASSY, EVF	

Ref. No.	Part No.	Description	Remarks
156	3-948-339-01	SCREW, TAPPING B2X5	
157	X-3945-448-1	FINDER ASSY	
158	3-963-160-01	CUP (DM), EYE	
159	3-968-916-01	CABINET (R), EVF	
160	3-968-334-01	SCREW, F LOCK	

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

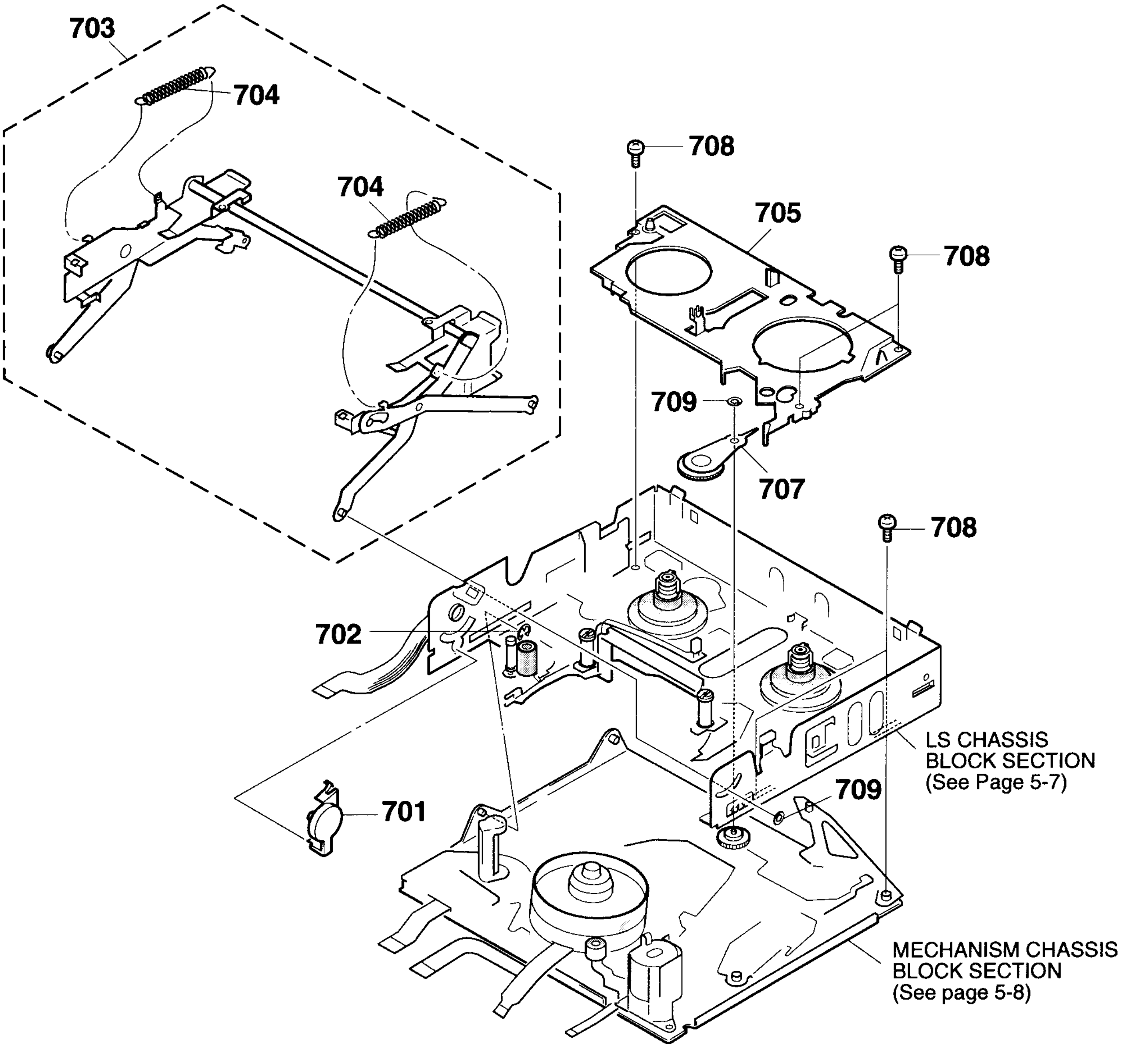
5-1-5. MAIN SECTION



*Be sure to read "Precautions for Replacement of CCD Imager" on page 4-13 when changing the CCD imager.

Ref. No.	Part No.	Description	Remarks
201	3-962-826-01	SCREW (2X4)	
202	A-7072-493-A	JK-146 BOARD, COMPLETE	
203	1-775-518-11	CABLE, FLEXIBLE FLAT 12P	
204	3-713-786-21	SCREW (M2X3)	
205	A-7072-821-A	DD-80 BOARD, COMPLETE (TRV11/TRV21)	
205	A-7092-822-A	DD-80P BOARD, COMPLETE (TRV11E/TRV21E)	
206	A-7092-817-A	VC-167 BOARD, COMPLETE (TRV11)	
206	A-7092-818-A	VC-167P BOARD, COMPLETE (TRV11E)	
206	A-7092-819-A	VC-167 BOARD, COMPLETE (TRV21)	
206	A-7092-820-A	VC-167P BOARD, COMPLETE (TRV21E)	
207	1-660-432-11	FP-409 FLEXIBLE BOARD	
* 208	3-965-897-01	FRAME, MD	
209	1-547-739-21	LENS, ZOOM (VCL-5412WB)	
210	3-946-856-01	ADAPTOR (H), CCD FITTING	
211	1-547-558-21	FILTER BLOCK, OPTICAL (TRV11/TRV11E)	
211	1-547-735-51	FILTER BLOCK, OPTICAL (TRV21/TRV21E)	
212	3-946-857-01	RUBBER (S), SEAL (TRV11/TRV11E)	
212	3-960-149-01	RUBBER (3), SEAL (TRV21/TRV21E)	
213	A-7072-494-A	CD-147 BOARD, COMPLETE (TRV11/TRV11E)	
213	A-7072-596-A	CD-147 BOARD, COMPLETE (TRV21/TRV21E)	
214	3-947-268-01	+B2X7.5 TAPPING P TAIT	
* 215	3-968-917-01	FRAME, LENS	
216	3-965-871-01	SCREW, tripod	
* 217	3-968-918-02	CUSHION, LENS	
218	A-7072-518-A	CN-98 BOARD, COMPLETE	
* 219	3-970-735-02	CUSHION, MD (TRV11/TRV11E)	
220	3-971-000-01	PROTECTOR, L FLEXIBLE	
221	1-776-863-11	CABLE, FLEXIBLE FLAT 22P	
222	3-948-339-11	SCREW, TAPPING B2X5	
223	A-7072-504-A	TZ-5 BOARD, COMPLETE (TRV21/TRV21E)	
224	1-660-435-11	FP-402 FLEXIBLE BOARD (TRV21/TRV21E)	
* 225	3-970-737-01	CUSHION, (A), TZ (TRV21/TRV21E)	
* 226	3-970-738-01	CUSHION, (B), TZ (TRV21/TRV21E)	
IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-11) (CCD IMAGER)(TRV11)	
IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11) (CCD IMAGER)(TRV11E)	
IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41) (CCD IMAGER)(TRV21)	
IC790	A-7030-495-A	CCD BLOCK ASSY (ICX-060AK-41) (CCD IMAGER)(TRV21E)	

5-1-6. CASSETTE COMPARTMENT BLOCK SECTION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LS CHASSIS
BLOCK SECTION
(See Page 5-7)
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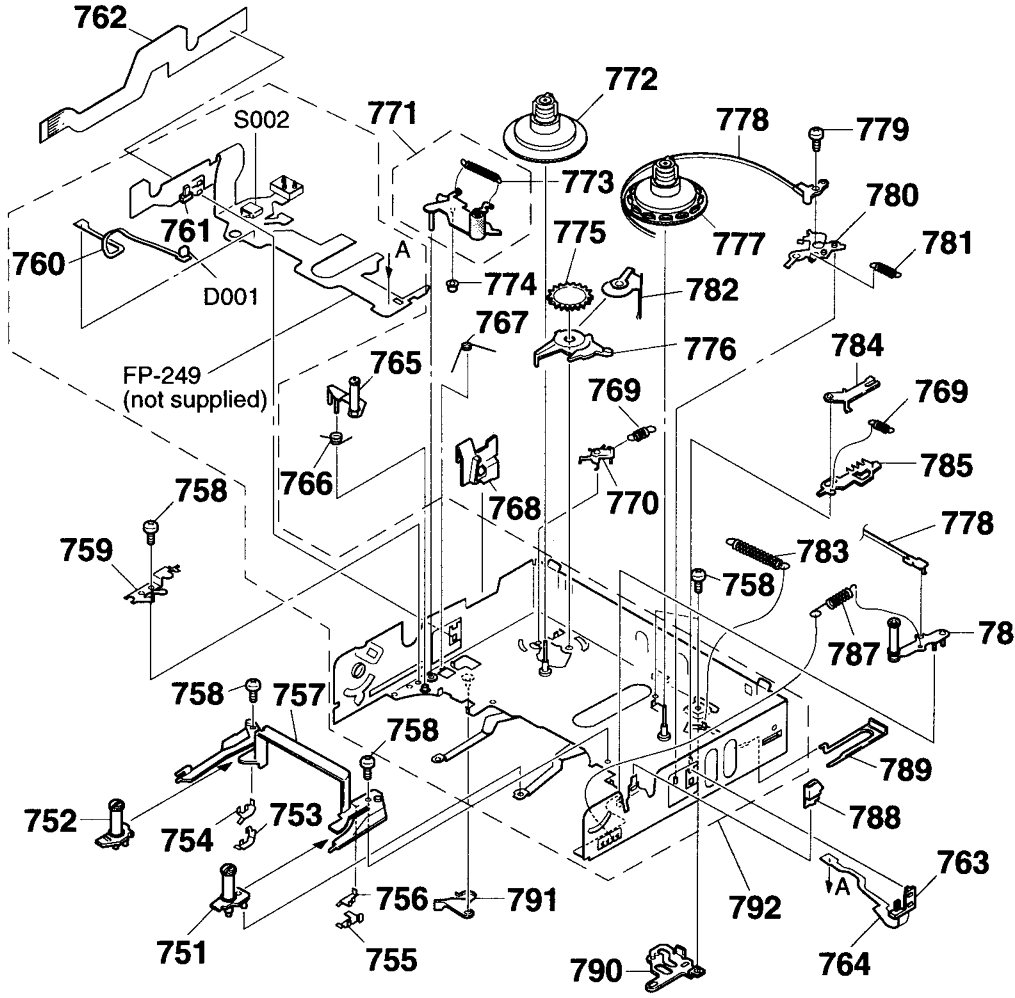
MECHANISM CHASSIS
BLOCK SECTION
(See page 5-8)

Ref. No.	Part No.	Description	Remarks
701	A-7040-421-A	DAMPER ASSY	
702	7-624-102-04	STOP RING 1.5, TYPE -E	
703	X-3945-400-1	CASSETTE COMPARTMENT ASSY	
704	3-965-587-01	SPRING, TENSION	

Ref. No.	Part No.	Description	Remarks
705	3-965-584-01	RETAINER, GOOSENECK	
707	X-3945-399-1	GEAR ASSY, GOOSENECK	
708	3-947-503-01	SCREW (M1.4X2.5)	
709	3-331-007-21	WASHER	

5-1-7. LS CHASSIS BLOCK SECTION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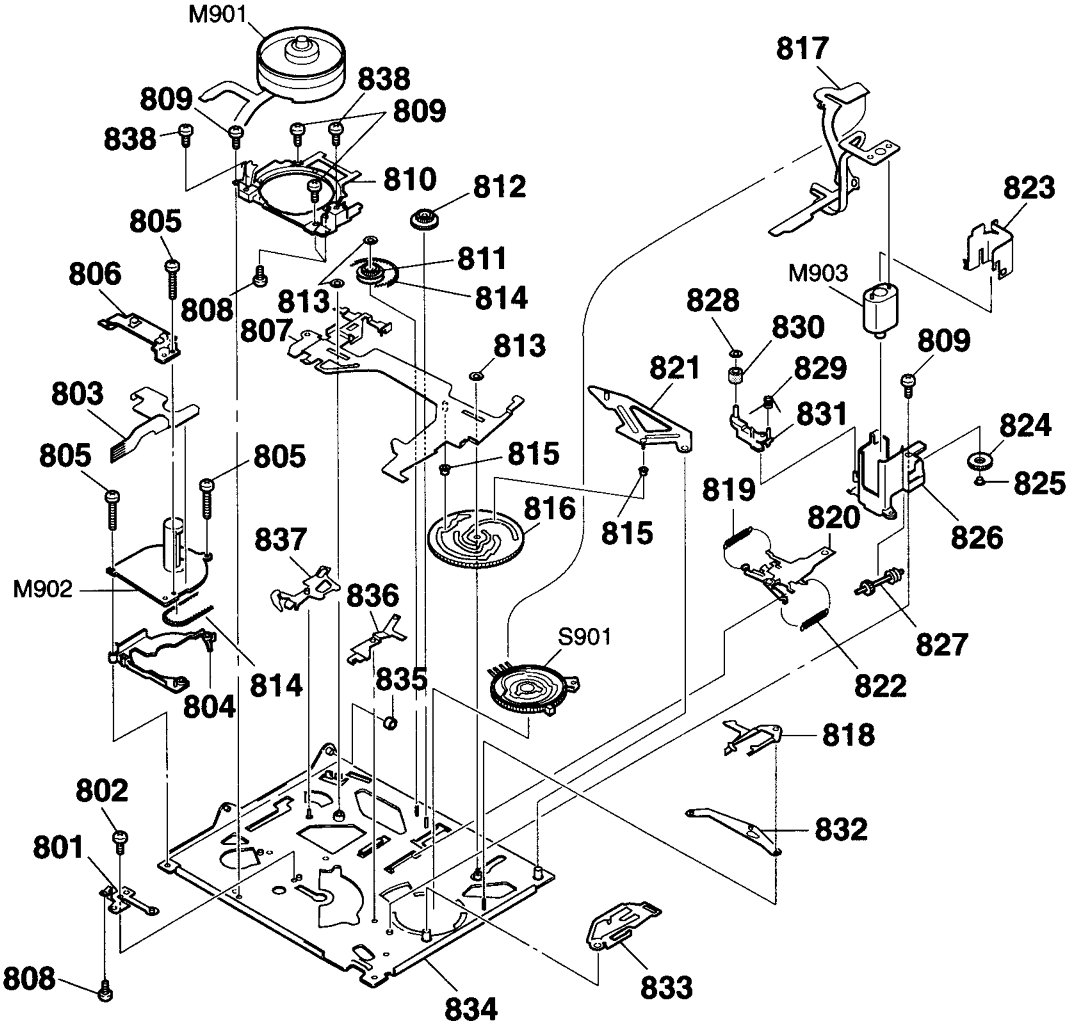
Ref. No.	Part No.	Description	Remarks
751	A-7040-419-A	BASE (S) BLOCK ASSY, GUIDE	
752	A-7040-418-A	BASE (T) BLOCK ASSY, GUIDE	
753	3-965-559-01	STOPPER (T)	
754	3-965-557-01	STOPPER (T), GB	
755	3-965-558-01	STOPPER (S)	
756	3-965-556-01	STOPPER (S), GB	
757	3-965-553-01	RAIL, GUIDE	
758	3-947-503-01	SCREW (M1.4X2.5)	
759	3-965-573-01	RETAINER, TG4	
760	1-658-213-11	FP-355 FLEXIBLE BOARD	
761	3-965-552-01	HOLDER (T), SENSOR	
762	1-657-786-11	FP-221 FLEXIBLE BOARD	
763	3-965-551-01	HOLDER (S), SENSOR	
764	1-658-214-11	FP-356 FLEXIBLE BOARD	
765	A-7040-417-A	ARM BLOCK ASSY, TG4	
766	3-965-574-01	SPRING, TORSION	
767	3-965-575-01	SPRING (PINCH), TORSION	
768	3-965-568-01	GUIDE, LOCK	
769	3-965-562-01	SPRING (RATCHET), TENSION	
770	3-965-581-01	RATCHET, T	
771	X-3945-394-1	ARM ASSY, PINCH	
772	X-3945-398-1	DECK ASSY, REEL, T	
773	3-965-648-01	SPRING (PINCH), TENSION	
774	3-965-579-01	ROLLER, PINCH PRESS	
775	3-965-563-01	GEAR, T SOFT	
776	3-965-565-01	CLAW, T SOFT	
777	X-3945-397-1	DECK ASSY, REEL, S	
778	X-3945-396-1	BAND ASSY, TENSION REGULATOR	
779	3-945-756-01	SCREW (M1.4X3)	
780	3-965-583-01	ARM, RVS	
781	3-965-580-01	SPRING, TENSION	
782	3-966-384-01	SPRING, T SOFT	
783	3-965-578-01	SPRING, TENSION	
784	3-965-560-01	RATCHET, S	
785	3-965-561-01	PLATE, RELEASE, S RATCHET	
786	X-3945-395-1	ARM ASSY, TG1	
787	3-965-576-01	SPRING (TG1), TENSION	
788	3-965-567-01	LID OPEN	
789	3-965-566-01	COVER, LS GUIDE	
* 790	3-965-577-01	PLATE, CAM, LS	
791	3-965-569-01	ARM, EJ	
792	A-7040-427-A	CHASSIS (S1) ASSY, LS	
D001	8-719-988-42	DIODE GL453S	
S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C.C.LOCK)	

5-1-8. MECHANISM CHASSIS BLOCK SECTION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Ref. No.	Part No.	Description	Remarks
801	3-965-525-01	GROUND, SHAFT	
802	3-965-550-02	SCREW (M1.7X1.6)	
803	1-657-785-11	FP-248 FLEXIBLE BOARD	
804	3-965-545-01	SPACER, CAPSTAN	
805	3-965-549-01	SCREW (M1.4X6.5)	
806	3-966-349-01	HOLDER, FLEXIBLE	
807	X-3945-387-1	SLIDER ASSY, M	
808	3-965-588-01	SCREW (M1.4)	
809	3-947-503-01	SCREW (M1.4X2.5)	
810	A-7040-416-A	BASE BLOCK ASSY, DRUM	
811	3-965-527-01	GEAR, CHANGE	
812	3-965-544-01	GEAR, RELAY	
813	3-331-007-21	WASHER	
814	3-965-546-01	BELT, TIMING	
815	3-965-533-01	ROLLER, LS	
816	3-965-528-01	GEAR, CAM	
817	1-657-784-11	FP-220 FLEXIBLE BOARD	
818	3-965-529-01	PLATE, REGULATOR, TENSION	
819	3-965-536-01	SPRING, TENSION	
820	X-3945-388-1	SLIDER ASSY, GL	
821	3-965-532-01	ARM, LS	
822	3-965-535-01	SPRING, TENSION	
823	3-965-542-01	SHIELD, MOTOR	
824	3-965-539-01	GEAR (A)	
825	3-965-538-01	SLEEVE, MOTOR HOLDER	
826	3-965-540-01	HOLDER, MOTOR	
827	3-965-541-01	SHAFT, WORM	
828	3-321-393-01	WASHER, STOPPER	
829	3-965-724-01	SPRING, TORSION	
830	A-7040-423-A	ROLLER BLOCK ASSY, HC	
831	X-3945-407-1	ARM ASSY, HC ROLLER	
832	3-965-531-01	ARM, GL	
833	3-965-530-01	PLATE (2), REGULATOR, TENSION	
834	X-3945-386-1	CHASSIS ASSY, MECHANICAL	
835	3-965-526-01	ROLLER, LS GUIDE	
836	3-965-547-01	ARM, HC DRIVING	
837	3-965-534-01	PLATE, PRESS, PINCH	
838	3-966-819-01	SCREW +P1.4X3	
M901	A-7048-806-A	DRUM BLOCK ASSY(DGH-0C2A-R)	(TRV11E/TRV21E)
M901	A-7048-804-A	DRUM BLOCK ASSY(DGH-0C1A-R)	(TRV11/TRV21)
M902	8-835-531-02	MOTOR, DC SCE-0601A (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-11	SWITCH, ROTARY (ENCODER)	

5-2. ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

Les composants identifiés par une marque ⚠ sont critiques pour la sécurité.
Ne les remplacer que par une pièce portant le numéro spécifie.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be defferent from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μ PB... , uPC... , μPC... ,
  uPD..., μPD...
- CAPACITORS:
  uF: μF
- COILS
  uH: μH

Ref. No.	Part No.	Description	Remarks
	A-7072-494-A	CD-147 BOARD, COMPLETE (TRV11/TRV11E)	
		**********************	
	A-7072-596-A	CD-147 BOARD, COMPLETE (TRV21/TRV21E)	
		**********************	
			(Ref.No.2,000 Series)
		< CAPACITOR >	
C790	1-126-603-11	ELECT CHIP 4.7uF 20% 35V	
C791	1-164-346-11	CERAMIC CHIP 1uF 16V	
C792	1-126-607-11	ELECT CHIP 47uF 20% 4V	
C793	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C794	1-126-603-11	ELECT CHIP 4.7uF 20% 35V	
C795	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TRV11/TRV11E)
		< CONNECTOR >	
CN790	1-766-677-21	CONNECTOR, FFC/FPC 16P	
		< IC >	
IC790	A-7030-368-A	CC D BLOCK ASSY (ICX-054AK-11)	(CCD IMAGER)(TRV11)
IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11)	(CCD IMAGER)(TRV11E)
IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41)	(CCD IMAGER)(TRV21)
IC790	A-7030-495-A	CCD BLOCK ASSY (ICX-060AK-41)	(CCD IMAGER)(TRV21E)
		< COIL >	
L790	1-412-963-11	INDUCTOR 100uH	
		< TRANSISTOR >	
Q790	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q791	8-729-232-86	TRANSISTOR 2SK1875	

Ref. No.	Part No.	Description	Remarks
		< RESISTOR >	
R791	1-216-839-11	METAL CHIP 33K 5% 1/16W	(TRV11/TRV11E)
R791	1-216-840-11	METAL CHIP 39K 5% 1/16W	(TRV21/TRV21E)
R792	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11/TRV11E)
R792	1-216-820-11	METAL CHIP 820 5% 1/16W	(TRV21/TRV21E)
R793	1-216-849-11	METAL CHIP 220K 5% 1/16W	(TRV11/TRV11E)
R793	1-218-895-11	METAL CHIP 100K 0.50% 1/16W	(TRV21/TRV21E)
R794	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R795	1-216-809-11	METAL CHIP 100 5% 1/16W	
R796	1-216-833-11	METAL CHIP 10K 5% 1/16W	

Ref. No.	Part No.	Description	Remarks
	A-7092-830-A	CF-42 BOARD, COMPLETE	
		*********************	
			(TRV21:E,Tourist/TRV21E)
	A-7092-828-A	CF-42 BOARD, COMPLETE(TRV11/TRV11E)	
		*********************	
	A-7092-829-A	CF-42 BOARD, COMPLETE	(TRV21:US,Canadian)
		*********************	
			(Ref.No.2,000 Series)
		< HOLDER >	
BH480	1-550-104-11	HOLDER, BATTERY	
		< CAPACITOR >	
C300	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C301	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C302	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	
C303	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
C304	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C305	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C306	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C308	1-104-847-11	TANTAL. CHIP 22uF 20% 4V	
C310	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C311	1-164-156-11	CERAMIC CHIP 0.1uF 25V	

CF-42

Ref. No.	Part No.	Description			Remarks
C312	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C313	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TRV21/TRV21E)
C314	1-135-091-91	TANTAL. CHIP	1uF	20%	16V (TRV21/TRV21E)
C315	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C316	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C317	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C318	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C319	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C320	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C321	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C322	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C323	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C325	1-104-850-11	TANTAL. CHIP	6.8uF	20%	10V
C326	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C327	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C328	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C332	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C333	1-162-961-11	CERAMIC CHIP	330PF	10%	50V
C335	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C336	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C337	1-164-346-11	CERAMIC CHIP	1uF		16V
C339	1-162-974-11	CERAMIC CHIP	0.01uF		50V
C340	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C341	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C342	1-162-995-11	CERAMIC CHIP	0.022uF		50V
C344	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C345	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C348	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C349	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C350	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C351	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C352	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C356	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C357	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C358	1-113-642-11	TANTAL. CHIP	47uF	20%	10V
C359	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C516	1-162-974-11	CERAMIC CHIP	0.01uF		50V
		< CONNECTOR >			
CN301	1-770-620-21	PIN, CONNECTOR 3P			
CN302	1-770-630-21	PIN, CONNECTOR 13P			
CN304	1-770-625-21	PIN, CONNECTOR 8P			
CN305	1-764-708-21	CONNECTOR, FFC/FPC (LIF) 9P			
CN306	1-580-055-21	PIN, CONNECTOR 2P			
CN480	1-774-054-21	CONNECTOR, FFC/FPC (ZIF) 45P			
CN481	1-764-680-21	CONNECTOR, FFC/FPC (ZIF) 8P			

Ref. No.	Part No.	Description		Remarks
		< DIODE >		
D301	8-719-027-50	DIODE	MA142WK	
D302	8-719-052-33	DIODE	MAZV082DFL	
D303	8-719-420-14	DIODE	MA8082-M	
D304	8-719-420-14	DIODE	MA8082-M	
D305	8-719-052-33	DIODE	MAZV082DFL	
D306	8-719-420-14	DIODE	MA8082-M	
D307	8-719-404-49	DIODE	MA111	
D310	8-719-039-XX	DIODE	UMZ8.2T-T106	
D311	8-719-404-49	DIODE	MA111	
D312	8-719-420-14	DIODE	MA8082-M	
D314	8-719-404-49	DIODE	MA111	(TRV21/TRV21E)
D315	8-719-404-49	DIODE	MA111	(TRV21/TRV21E)
⚠D316	8-719-421-27	DIODE	MA728	
D317	8-719-404-49	DIODE	MA111	
D318	8-719-404-49	DIODE	MA111	
D319	8-719-420-14	DIODE	MA8082-M	
D320	8-719-420-14	DIODE	MA8082-M	
D321	8-719-404-49	DIODE	MA111	
D322	8-719-404-49	DIODE	MA111	
D323	8-719-404-49	DIODE	MA111	
D324	8-719-420-14	DIODE	MA8082-M	
D325	8-719-420-14	DIODE	MA8082-M	(TRV21/TRV21E)
D326	8-719-420-14	DIODE	MA8082-M	
D327	8-719-420-14	DIODE	MA8082-M	
D328	8-719-420-14	DIODE	MA8082-M	
D331	8-719-420-14	DIODE	MA8082-M	
D332	8-719-027-50	DIODE	MA142WK	
D333	8-719-404-49	DIODE	MA111	
D335	8-719-420-14	DIODE	MA8082-M	
D336	8-719-052-33	DIODE	MAZV082DFL	
D337	8-719-404-49	DIODE	MA111	
⚠D401	8-719-404-49	DIODE	MA111	
⚠D402	8-719-404-49	DIODE	MA111	
		< FILTER >		
FL300	1-411-527-21	COIL, OSC		
		< IC >		
IC301	8-759-298-10	IC	S-8423NFS-T2	
IC302	8-759-059-05	IC	TL1596CPW	
IC303	8-759-393-53	IC	MB89082PFV-G-109-BND	
IC304	8-759-075-68	IC	TC4066BFS	
IC651	8-759-299-00	IC	BA7785FS-E2	

Note: The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	**Note:** Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

Ref. No.	Part No.	Description	Remarks
		< JACK >	
J480	1-565-276-21	JACK, ULTRA SMALL 1P	
J481	1-695-514-11	JACK (SMALL TYPE) 1P	
		< COIL >	
L300	1-414-078-11	INDUCTOR 10uH	
L301	1-414-078-11	INDUCTOR 10uH	
L303	1-216-295-91	CONDUCTOR, CHIP (2012)	(TRV11/TRV11E)
L303	1-414-235-11	INDUCTOR, FERRITE BEAD	(TRV21/TRV21E)
L304	1-412-032-11	INDUCTOR CHIP 100uH	
L305	1-216-295-91	CONDUCTOR, CHIP (2012)	
		< IC LINK >	
⚠PS301	1-576-122-21	LINK, IC 50V 0.4A	
		< TRANSISTOR >	
Q301	8-729-823-16	TRANSISTOR 2SC4555-5.6.7	(TRV21/TRV21E)
Q302	8-729-032-00	TRANSISTOR 2SJ381-TD	(TRV21/TRV21E)
Q303	8-729-402-81	TRANSISTOR XN4501	(TRV21/TRV21E)
Q304	8-729-015-76	TRANSISTOR UN5211	(TRV21/TRV21E)
Q305	8-729-015-76	TRANSISTOR UN5211	
Q306	8-729-015-76	TRANSISTOR UN5211	
Q307	8-729-015-60	TRANSISTOR 2SJ316	
Q309	8-729-015-76	TRANSISTOR UN5211	
Q310	8-729-403-35	TRANSISTOR UN5113	
Q311	8-729-015-76	TRANSISTOR UN5211	
Q314	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q315	8-729-015-76	TRANSISTOR UN5211	
Q316	8-729-015-60	TRANSISTOR 2SJ316	
		< RESISTOR >	
R300	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R301	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R302	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R303	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R304	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R305	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R306	1-216-864-11	METAL CHIP 0 5% 1/16W	
R307	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R308	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R309	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R310	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R311	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R312	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R313	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R314	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R315	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R316	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R317	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R318	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R319	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R321	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R322	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R323	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R324	1-216-864-11	METAL CHIP 0 5% 1/16W	
R325	1-216-864-11	METAL CHIP 0 5% 1/16W	
R326	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R327	1-216-864-11	METAL CHIP 0 5% 1/16W	
R332	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV11E)
R333	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R334	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R335	1-216-817-11	METAL CHIP 470 5% 1/16W	
R336	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV21/TRV21E)
R337	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV21/TRV21E)
R338	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TRV21/TRV21E)
R341	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R342	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R343	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R344	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R345	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R346	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R347	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R348	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R349	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R350	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R351	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R352	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R353	1-216-864-11	METAL CHIP 0 5% 1/16W	
R354	1-216-864-11	METAL CHIP 0 5% 1/16W	
R355	1-216-864-11	METAL CHIP 0 5% 1/16W	
R356	1-216-864-11	METAL CHIP 0 5% 1/16W	
R357	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	
R358	1-216-864-11	METAL CHIP 0 5% 1/16W	
R359	1-216-805-11	METAL CHIP 47 5% 1/16W	
R360	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV21:US,Canadian)
R361	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV21:US,Canadian)
R362	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R364	1-216-864-11	METAL CHIP 0 5% 1/16W	
R365	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV21:E,Tourist/TRV21E)
R366	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R367	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R368	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R369	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R370	1-216-864-11	METAL CHIP 0 5% 1/16W	

Note:	**Note:**
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

Ref. No.	Part No.	Description			Remarks
R371	1-216-864-11	METAL CHIP	0	5%	1/16W
R372	1-216-864-11	METAL CHIP	0	5%	1/16W
R373	1-216-821-11	METAL CHIP	1K	5%	1/16W
R374	1-216-821-11	METAL CHIP	1K	5%	1/16W
R375	1-216-853-11	METAL CHIP	470K	5%	1/16W
R376	1-216-821-11	METAL CHIP	1K	5%	1/16W
R377	1-216-821-11	METAL CHIP	1K	5%	1/16W
R378	1-216-821-11	METAL CHIP	1K	5%	1/16W
R379	1-216-821-11	METAL CHIP	1K	5%	1/16W
R380	1-216-821-11	METAL CHIP	1K	5%	1/16W
R381	1-216-821-11	METAL CHIP	1K	5%	1/16W
R382	1-216-817-11	METAL CHIP	470	5%	1/16W
R383	1-216-864-11	METAL CHIP	0	5%	1/16W
R384	1-216-833-11	METAL CHIP	10K	5%	1/16W
R385	1-216-833-11	METAL CHIP	10K	5%	1/16W
R386	1-216-833-11	METAL CHIP	10K	5%	1/16W
R387	1-216-833-11	METAL CHIP	10K	5%	1/16W
R388	1-216-833-11	METAL CHIP	10K	5%	1/16W
R389	1-216-849-11	METAL CHIP	220K	5%	1/16W
R390	1-216-849-11	METAL CHIP	220K	5%	1/16W
R391	1-216-857-11	METAL CHIP	1M	5%	1/16W
R392	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R393	1-216-809-11	METAL CHIP	100	5%	1/16W
R394	1-216-845-11	METAL CHIP	100K	5%	1/16W
R395	1-216-833-11	METAL CHIP	10K	5%	1/16W (TRV21/TRV21E)
R396	1-216-833-11	METAL CHIP	10K	5%	1/16W
R397	1-216-845-11	METAL CHIP	100K	5%	1/16W
R398	1-216-845-11	METAL CHIP	100K	5%	1/16W
R399	1-216-851-11	METAL CHIP	330K	5%	1/16W
R400	1-216-833-11	METAL CHIP	10K	5%	1/16W
R401	1-216-864-11	METAL CHIP	0	5%	1/16W
R402	1-216-833-11	METAL CHIP	10K	5%	1/16W
R403	1-216-833-11	METAL CHIP	10K	5%	1/16W
R404	1-216-833-11	METAL CHIP	10K	5%	1/16W
R406	1-216-864-11	METAL CHIP	0	5%	1/16W
R407	1-216-821-11	METAL CHIP	1K	5%	1/16W
R408	1-216-821-11	METAL CHIP	1K	5%	1/16W
R409	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R410	1-216-853-11	METAL CHIP	470K	5%	1/16W
R411	1-216-826-11	METAL CHIP	2.7K	5%	1/16W
R412	1-216-857-11	METAL CHIP	1M	5%	1/16W
R413	1-216-849-11	METAL CHIP	220K	5%	1/16W
R414	1-216-833-11	METAL CHIP	10K	5%	1/16W
R415	1-216-845-11	METAL CHIP	100K	5%	1/16W
R416	1-216-821-11	METAL CHIP	1K	5%	1/16W
R418	1-216-841-11	METAL CHIP	47K	5%	1/16W
R421	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R424	1-216-810-11	METAL CHIP	120	5%	1/16W
R430	1-216-864-11	METAL CHIP	0	5%	1/16W
R431	1-218-290-11	METAL GLAZE	6.2K	5%	1/16W

Ref. No.	Part No.	Description			Remarks
R432	1-216-836-11	METAL CHIP	18K	5%	1/16W
R435	1-216-853-11	METAL CHIP	470K	5%	1/16W
R437	1-216-864-11	METAL CHIP	0	5%	1/16W
R490	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R493	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV11/TRV11E)
R493	1-414-385-11	INDUCTOR, FERRITE BEAD			(TRV21/TRV21E)
R494	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV11/TRV11E/TRV21:US,Canadian)
R494	1-414-385-11	INDUCTOR, FERRITE BEAD			(TRV21:E,Tourist/TRV21E)
R495	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV11/TRV11E/TRV21:US,Canadian)
R495	1-414-385-11	INDUCTOR, FERRITE BEAD			(TRV21:E,Tourist/TRV21E)
R496	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV11/TRV11E/TRV21:US,Canadian)
R496	1-414-385-11	INDUCTOR, FERRITE BEAD			(TRV21:E,Tourist/TRV21E)
R498	1-216-845-11	METAL CHIP	100K	5%	1/16W
R501	1-216-833-11	METAL CHIP	10K	5%	1/16W

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV301	1-241-006-11	RES, VAR, CARBON 50K

< SWITCH >

Ref. No.	Part No.	Description
S300	1-553-977-00	SWITCH, SLIDE (TRV21/TRV21E)
S301	1-762-333-21	SWITCH, TACTILE
S302	1-762-333-21	SWITCH, TACTILE
S303	1-762-333-21	SWITCH, TACTILE
S304	1-553-977-00	SWITCH, SLIDE
S305	1-553-977-00	SWITCH, SLIDE
S480	1-762-333-21	SWITCH, TACTILE
S481	1-762-333-21	SWITCH, TACTILE
S482	1-762-333-21	SWITCH, TACTILE
S483	1-553-977-00	SWITCH, SLIDE
S484	1-762-333-21	SWITCH, TACTILE
S485	1-570-113-11	SWITCH, SLIDE
S486	1-570-397-11	SWITCH, SLIDE (TRV21:US,Canadian)
S486	1-570-113-11	SWITCH, SLIDE (TRV21:E,Tourist/TRV21E)
S488	1-553-977-00	SWITCH, SLIDE
S501	1-692-280-11	SWITCH, PUSH (1 KEY)

< VIBRATOR >

Ref. No.	Part No.	Description
X302	1-579-463-11	VIBRATOR, CRYSTAL 32KHz
XTL301	1-579-369-21	VIBRATOR 10MHz

A-7072-518-A CN-98 BOARD, COMPLETE

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(Ref.No.9,000 Series)

< CONNECTOR >

Ref. No.	Part No.	Description
CN101	1-691-386-11	CONNECTOR, FFC/FPC 22P
CN102	1-774-644-21	CONNECTOR, FFC/FPC 22P

Ref. No.	Part No.	Description	Remarks
	A-7072-821-A	DD-80 BOARD, COMPLETE (TRV11/TRV21) **********************	
	A-7092-822-A	DD-80P BOARD, COMPLETE (TRV11E/TRV21E) **********************	
			(Ref.No.1,000 Series)
		< CAPACITOR >	
C001	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C002	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C003	1-164-004-11	CERAMIC CHIP 0.1uF 10% 25V	
C004	1-162-957-11	CERAMIC CHIP 220PF 5% 50V	
C005	1-162-967-11	CERAMIC CHIP 0.0033uF 10% 50V	
C006	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C007	1-164-227-11	CERAMIC CHIP 0.022uF 10% 25V	
C008	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C009	1-164-245-11	CERAMIC CHIP 0.015uF 10% 25V	
C010	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C011	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C012	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C013	1-128-065-11	ELECT 68uF 20% 10V	
C014	1-162-968-11	CERAMIC CHIP 0.0047uF 10% 50V	
C016	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C018	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C019	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C022	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C024	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C025	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C026	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C027	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C028	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C029	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C030	1-165-178-11	CERAMIC CHIP 6.8uF 16V	
C031	1-115-170-11	TANTALUM 4.7uF 20% 10V	(TRV11/TRV21)
C032	1-115-170-11	TANTALUM 4.7uF 20% 10V	
C033	1-115-169-11	TANTALUM 10uF 20% 6.3V	
C034	1-115-170-11	TANTALUM 4.7uF 20% 10V	
C035	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C036	1-115-169-11	TANTALUM 10uF 20% 6.3V	
C037	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C038	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C039	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C040	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C041	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C042	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C043	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C044	1-128-004-11	ELECT CHIP 10uF 20% 16V	
C045	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C046	1-128-006-11	ELECT CHIP 4.7uF 20% 25V	
C047	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	
C048	1-162-964-11	CERAMIC CHIP 0.001uF 10% 50V	

Ref. No.	Part No.	Description	Remarks
		< CONNECTOR >	
CN002	1-770-620-21	PIN, CONNECTOR 3P	
* CN003	1-691-935-11	CONNECTOR, BOARD TO BOARD 38P	
		< DIODE >	
D001	8-719-989-33	DIODE FC806	
D002	8-719-420-14	DIODE MA8082-M	
		< FUSE >	
⚠F001	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)
⚠F002	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)
⚠F003	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)
⚠F004	1-533-483-11	FUSE (SMD) 125V 1.6A	(TRV11/TRV21)
		< IC >	
⚠IC001	8-759-350-29	IC SN104213PM	
		< JACK >	
J001	1-537-241-11	TERMINAL BOARD (BATTERY)	
		< COIL >	
L002	1-411-460-21	COEL, CHOKE 10uH	
L003	1-411-460-21	COEL, CHOKE 10uH	
L004	1-411-460-21	COEL, CHOKE 10uH	
L005	1-409-556-11	COIL, CHOKE 47uH	
L006	1-409-556-11	COIL, CHOKE 47uH	
L007	1-424-674-11	COIL, CHOKE 22uH	
L008	1-409-556-11	COIL, CHOKE 47uH	
L009	1-424-674-11	COIL, CHOKE 22uH	
L010	1-412-056-11	INDUCTOR CHIP 4.7uH	
L011	1-412-056-11	INDUCTOR CHIP 4.7uH	
L012	1-412-056-11	INDUCTOR CHIP 4.7uH	
L013	1-412-056-11	INDUCTOR CHIP 4.7uH	
L014	1-412-066-21	INDUCTOR CHIP 220uH	
L015	1-412-066-21	INDUCTOR CHIP 220uH	
L016	1-412-056-11	INDUCTOR CHIP 4.7uH	
L017	1-412-056-11	INDUCTOR CHIP 4.7uH	
L018	1-412-056-11	INDUCTOR CHIP 4.7uH	
		< IC LINK >	
⚠PS001	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)
⚠PS002	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)
⚠PS003	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)
⚠PS004	1-533-284-11	LINK, CHIP IC 125V 1.6A	(TRV11E/TRV21E)

Note:	**Note:**
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

Ref. No.	Part No.	Description	Remarks
		< TRANSISTOR >	
Q001	8-729-033-14	TRANSISTOR FP107-TL	
Q002	8-729-033-14	TRANSISTOR FP107-TL	
Q003	8-729-804-41	TRANSISTOR 2SB1122-S	
Q004	8-729-033-14	TRANSISTOR FP107-TL	
Q005	8-729-033-14	TRANSISTOR FP107-TL	
Q006	8-729-033-14	TRANSISTOR FP107-TL	
Q007	8-729-030-75	TRANSISTOR 2SK2316-TD	
Q008	8-729-402-42	TRANSISTOR UN5213	
		< RESISTOR >	
R001	1-216-841-11	METAL CHIP 47K 5%	1/16W
R002	1-216-835-11	METAL CHIP 15K 5%	1/16W
R003	1-216-837-11	METAL CHIP 22K 5%	1/16W
R004	1-216-829-11	METAL CHIP 4.7K 5%	1/16W
R005	1-216-839-11	METAL CHIP 33K 5%	1/16W
R006	1-216-837-11	METAL CHIP 22K 5%	1/16W
R007	1-216-821-11	METAL CHIP 1K 5%	1/16W
R008	1-216-813-11	METAL CHIP 220 5%	1/16W
R009	1-216-841-11	METAL CHIP 47K 5%	1/16W
R010	1-216-845-11	METAL CHIP 100K 5%	1/16W
R014	1-216-821-11	METAL CHIP 1K 5%	1/16W
R015	1-216-819-11	METAL CHIP 680 5%	1/16W
R016	1-216-864-11	METAL CHIP 0 5%	1/16W
R017	1-216-833-11	METAL CHIP 10K 5%	1/16W
R018	1-216-833-11	METAL CHIP 10K 5%	1/16W
R019	1-216-833-11	METAL CHIP 10K 5%	1/16W
R020	1-216-835-11	METAL CHIP 15K 5%	1/16W
R021	1-216-839-11	METAL CHIP 33K 5%	1/16W
R022	1-216-831-11	METAL CHIP 6.8K 5%	1/16W
R023	1-216-797-11	METAL CHIP 10 5%	1/16W
R024	1-216-837-11	METAL CHIP 22K 5%	1/16W
R025	1-216-841-11	METAL CHIP 47K 5%	1/16W
R026	1-216-864-11	METAL CHIP 0 5%	1/16W
R027	1-216-833-11	METAL CHIP 10K 5%	1/16W
R032	1-216-864-11	METAL CHIP 0 5%	1/16W
R033	1-216-833-11	METAL CHIP 10K 5%	1/16W
		< SWITCH >	
S001	1-572-688-11	SWITCH, PUSH (1 KEY)(START/STOP)	
S002	1-572-467-21	SWITCH, PUSH (1 KEY)(EJECT)	
S003	1-762-441-11	SWITCH, ROTARY (ZOOM SW)	
S004	1-572-688-11	SWITCH, PUSH (1 KEY)(STANDBY)	
		< TRANSFORMER >	
⚠T001	1-429-164-21	TRANSFORMER, DC/DC CONVERTER	

Ref. No.	Part No.	Description	Remarks
		FP-249 BOARD ************	
			(Ref.No.5,000 Series)
	1-658-214-11	FP-356 FLEXIBLE BOARD	
	3-965-551-01	HOLDER (S), SENSOR	
	3-965-552-01	HOLDER (T), SENSOR	
		< ELEMENT >	
H001	8-719-033-37	ELEMENT, HALL HW-105C	
H002	8-719-033-37	ELEMENT, HALL HW-105C	
		< TRANSISTOR >	
Q001	8-729-907-25	PHOTO TRANSISTOR PT4850F	
Q002	8-729-907-25	PHOTO TRANSISTOR PT4850F	
		< SWITCH >	
S001	1-692-614-11	SWITCH, PUSH (3 KEY)	
S002	1-572-688-11	SWITCH, PUSH (1 KEY) (C.C.LOCK)	(TRV11/TRV11E/TRV21/TRV21E)

Ref. No.	Part No.	Description	Remarks
	1-658-213-11	FP-355 FLEXIBLE BOARD **********************	
			(Ref.No.5,000 Series)
		< DIODE >	
D001	8-719-988-42	DIODE GL453S	

Ref. No.	Part No.	Description	Remarks
	A-7072-493-A	JK-146 BOARD, COMPLETE **********************	
			(Ref.No.2,000 Series)
		< CAPACITOR >	
C065	1-162-970-11	CERAMIC CHIP 0.01uF 10%	25V
		< CONNECTOR >	
* CN060	1-764-521-11	CONNECTOR, FFC/FPC (ZIF) 12P	
		< DIODE >	
D060	8-719-027-50	DIODE MA142WK	
D061	8-719-027-50	DIODE MA142WK	
D063	8-719-039-XX	DIODE UMZ8.2T	
D069	8-719-039-XX	DIODE UMZ8.2T	
		< JACK >	
J060	1-537-726-11	TERMINAL BOARD	

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

< COIL >

Ref. No.	Part No.	Description	Remarks
L061	1-216-295-91	CONDUCTOR, CHIP (2012)	

A-7072-497-A MA-266 BOARD, COMPLETE
****

(Ref.No.2,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C964	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C978	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C980	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C982	1-165-128-11	CERAMIC CHIP	0.22uF		16V
C983	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C984	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C985	1-164-344-11	CERAMIC CHIP	0.068uF	10%	25V
C986	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C988	1-164-346-11	CERAMIC CHIP	1uF		16V
C990	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C991	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C993	1-124-779-00	ELECT CHIP	10uF	20%	16V

< CONNECTOR >

Ref. No.	Part No.	Description	Remarks
CN951	1-764-707-21	CONNECTOR, FFC/FPC (LIF) 8P	
CN953	1-580-055-21	PIN, CONNECTOR 2P	
CN954	1-764-708-21	CONNECTOR, FFC/FPC (LIF) 9P	

< DIODE >

Ref. No.	Part No.	Description	Remarks
D951	8-719-027-50	DIODE MA142WK-(TX)	
D952	8-719-027-50	DIODE MA142WK-(TX)	
D953	8-719-951-21	DIODE PR1102W-TR	
D954	8-719-420-14	DIODE MA8082-M	

< IC >

Ref. No.	Part No.	Description	Remarks
IC952	8-759-339-63	IC NJM2118V-TE2	
IC953	8-749-012-17	IC RS-140-T	

< JACK >

Ref. No.	Part No.	Description	Remarks
J951	1-568-027-11	JACK, SMALL TYPE 1P	

< COIL >

Ref. No.	Part No.	Description	Remarks
L952	1-414-235-11	INDUCTOR, FERRITE BEAD	
L953	1-414-235-11	INDUCTOR, FERRITE BEAD	

< TRANSISTOR >

Ref. No.	Part No.	Description	Remarks
Q951	8-729-420-24	TRANSISTOR 2SB1218A-QRS	

< RESISTOR >

Ref. No.	Part No.	Description			Remarks
R972	1-216-864-11	METAL CHIP	0	5%	1/16W
R974	1-216-864-11	METAL CHIP	0	5%	1/16W
R978	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
R979	1-216-821-11	METAL CHIP	1K	5%	1/16W
R980	1-216-830-11	METAL CHIP	5.6K	5%	1/16W
R981	1-216-838-11	METAL CHIP	27K	5%	1/16W
R982	1-216-831-11	METAL CHIP	6.8K	5%	1/16W
R983	1-216-838-11	METAL CHIP	27K	5%	1/16W
R997	1-216-809-11	METAL CHIP	100	5%	1/16W
R998	1-216-821-11	METAL CHIP	1K	5%	1/16W
R999	1-216-821-11	METAL CHIP	1K	5%	1/16W

< SWITCH >

Ref. No.	Part No.	Description	Remarks
S951	1-572-467-21	SWITCH, PUSH (1 KEY)	
S952	1-572-467-21	SWITCH, PUSH (1 KEY)	
S953	1-571-315-11	SWITCH, KEY BOARD	
S954	1-571-315-11	SWITCH, KEY BOARD	
S955	1-554-088-00	SWITCH, TACT	

A-7072-499-A PD-67 BOARD, COMPLETE (TRV11/TRV21)
****

A-7072-525-A PD-67P BOARD, COMPLETE (TRV11E/TRV21E)
****

(Ref.No.8,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C301	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C305	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C306	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C307	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C308	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C309	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C310	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C312	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C313	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C314	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C315	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C316	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C317	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C318	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C319	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C320	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C321	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C322	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C323	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C324	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C501	1-164-346-11	CERAMIC CHIP	1uF		16V
C502	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C503	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C505	1-164-505-11	CERAMIC CHIP	2.2uF		16V

Ref. No.	Part No.	Description			Remarks
C507	1-164-346-11	CERAMIC CHIP	1uF		16V
C508	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C509	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C510	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C511	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C512	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-113-986-11	TANTAL. CHIP	2.2uF	20%	25V
C516	1-164-346-11	CERAMIC CHIP	1uF		16V
C517	1-164-346-11	CERAMIC CHIP	1uF		16V
C518	1-164-346-11	CERAMIC CHIP	1uF		16V
C519	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C520	1-164-346-11	CERAMIC CHIP	1uF		16V
C521	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C522	1-113-981-11	TANTAL. CHIP	22uF	20%	20V
C523	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C524	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C525	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C526	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C527	1-164-346-11	CERAMIC CHIP	1uF		16V
C528	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C529	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C530	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C531	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C533	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C534	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
⚠C535	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
⚠C537	1-109-858-11	CERAMIC CHIP	15PF	10%	3KV

< CONNECTOR >

Ref. No.	Part No.	Description
CN301	1-764-708-21	CONNECTOR, FFC/FPC (LIF) 9P
CN302	1-766-677-21	CONNECTOR, FFC/FPC 16P
CN303	1-770-630-21	PIN, CONNECTOR 13P
CN304	1-691-386-11	CONNECTOR, FFC/FPC 22P
CN501	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P

< DIODE >

Ref. No.	Part No.	Description	
D302	8-719-420-14	DIODE	MA8082-M
D303	8-719-951-20	LED	BR1102W
D304	8-719-039-XX	DIODE	UMZ8.2T
D305	8-713-102-80	DIODE	1T369-01-T8A
D306	8-719-404-49	DIODE	MA111
D307	8-713-102-80	DIODE	1T369-01-T8A
D309	8-719-421-27	DIODE	MA728
D310	8-719-039-XX	DIODE	UMZ8.2T
D501	8-719-420-51	DIODE	MA729
D502	8-719-404-49	DIODE	MA111
D503	8-719-989-33	DIODE	FC806
D504	8-719-941-86	DIODE	DAN202U
D507	8-719-404-49	DIODE	MA111
D508	8-719-033-14	DIODE	CL-170PG-CD-T
D509	8-719-027-50	DIODE	MA142WK

< IC >

Ref. No.	Part No.	Description		Remarks
IC301	8-759-359-49	IC	NJM3414AV(TE2)	
IC302	8-759-368-60	IC	CM7012L3	
⚠IC501	8-759-521-35	IC	TL5001CD	
⚠IC502	8-759-521-35	IC	TL5001CD	
IC503	8-759-075-70	IC	TA75S393F	

< COIL >

Ref. No.	Part No.	Description
L301	1-412-031-11	INDUCTOR CHIP 47uH
L302	1-412-028-11	INDUCTOR CHIP 4.7uH
L303	1-412-954-11	INDUCTOR 18uH
L304	1-412-957-11	INDUCTOR 33uH
L305	1-412-029-11	INDUCTOR CHIP 10uH
L502	1-412-029-11	INDUCTOR CHIP 10uH
L503	1-412-032-11	INDUCTOR CHIP 100uH
L504	1-412-032-11	INDUCTOR CHIP 100uH
L505	1-412-032-11	INDUCTOR CHIP 100uH
L506	1-412-028-11	INDUCTOR CHIP 4.7uH
L507	1-424-674-11	COIL, CHOKE 22uH
L508	1-406-924-11	COIL, CHOKE 150uH

< TRANSISTOR >

Ref. No.	Part No.	Description	
Q301	8-729-402-42	TRANSISTOR	UN5213
Q303	8-729-420-24	TRANSISTOR	2SB1218A-QRS
Q501	8-729-420-24	TRANSISTOR	2SB1218A-QRS
Q502	8-729-420-20	TRANSISTOR	XN4312
Q503	8-729-402-42	TRANSISTOR	UN5213
Q504	8-729-230-63	TRANSISTOR	2SC4116-YG
Q505	8-729-804-41	TRANSISTOR	2SB1122-S
Q506	8-729-230-63	TRANSISTOR	2SC4116-YG
Q507	8-729-823-84	TRANSISTOR	FP102
Q508	8-729-402-42	TRANSISTOR	UN5213
Q509	8-729-402-93	TRANSISTOR	UN5214
Q510	8-729-028-36	TRANSISTOR	FX507-TL1
Q511	8-729-420-20	TRANSISTOR	XN4312

< RESISTOR >

Ref. No.	Part No.	Description			Remarks
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R303	1-216-836-11	METAL CHIP	18K	5%	1/16W
R304	1-218-290-11	METAL GLAZE	6.2K	5%	1/16W
R305	1-216-817-11	METAL CHIP	470	5%	1/16W
R306	1-216-838-11	METAL CHIP	27K	5%	1/16W
R307	1-216-839-11	METAL CHIP	33K	5%	1/16W
R308	1-216-833-11	METAL CHIP	10K	5%	1/16W
R309	1-216-845-11	METAL CHIP	100K	5%	1/16W
R310	1-216-845-11	METAL CHIP	100K	5%	1/16W
R311	1-216-845-11	METAL CHIP	100K	5%	1/16W

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

Ref. No.	Part No.	Description			Remarks
R312	1-216-857-11	METAL CHIP	1M	5%	1/16W
R313	1-216-841-11	METAL CHIP	47K	5%	1/16W
R314	1-216-839-11	METAL CHIP	33K	5%	1/16W
R315	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R316	1-216-841-11	METAL CHIP	47K	5%	1/16W
R317	1-216-845-11	METAL CHIP	100K	5%	1/16W
R318	1-216-841-11	METAL CHIP	47K	5%	1/16W
R319	1-216-841-11	METAL CHIP	47K	5%	1/16W
R320	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV11/TRV21)
R321	1-216-845-11	METAL CHIP	100K	5%	1/16W
R322	1-216-844-11	METAL CHIP	82K	5%	1/16W
R323	1-216-857-11	METAL CHIP	1M	5%	1/16W
R324	1-216-837-11	METAL CHIP	22K	5%	1/16W
R325	1-216-843-11	METAL CHIP	68K	5%	1/16W
R326	1-216-864-11	METAL CHIP	0	5%	1/16W (TRV11E/TRV21E)
R327	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R328	1-216-841-11	METAL CHIP	47K	5%	1/16W
R329	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R330	1-216-833-11	METAL CHIP	10K	5%	1/16W
R331	1-216-857-11	METAL CHIP	1M	5%	1/16W
R332	1-216-833-11	METAL CHIP	10K	5%	1/16W
R334	1-216-844-11	METAL CHIP	82K	5%	1/16W (TRV11/TRV21)
R334	1-216-849-11	METAL CHIP	220K	5%	1/16W (TRV11E/TRV21E)
R335	1-216-833-11	METAL CHIP	10K	5%	1/16W
R336	1-216-821-11	METAL CHIP	1K	5%	1/16W
R337	1-216-821-11	METAL CHIP	1K	5%	1/16W
R338	1-216-839-11	METAL CHIP	33K	5%	1/16W
R339	1-216-839-11	METAL CHIP	33K	5%	1/16W
R340	1-216-840-11	METAL CHIP	39K	5%	1/16W
R341	1-216-845-11	METAL CHIP	100K	5%	1/16W
R342	1-216-819-11	METAL CHIP	680	5%	1/16W
R343	1-216-843-11	METAL CHIP	68K	5%	1/16W
R344	1-216-821-11	METAL CHIP	1K	5%	1/16W
R345	1-216-864-11	METAL CHIP	0	5%	1/16W
R346	1-216-864-11	METAL CHIP	0	5%	1/16W
R347	1-216-864-11	METAL CHIP	0	5%	1/16W
R501	1-216-853-11	METAL CHIP	470K	5%	1/16W
R502	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R503	1-216-842-11	METAL CHIP	56K	5%	1/16W
R504	1-218-855-11	METAL CHIP	2.2K	0.50%	1/16W
R505	1-218-881-11	METAL CHIP	27K	0.50%	1/16W
R506	1-218-839-11	METAL GLAZE	470	0.50%	1/16W
R507	1-218-881-11	METAL CHIP	27K	0.50%	1/16W
R508	1-216-832-11	METAL CHIP	8.2K	5%	1/16W
R509	1-218-897-11	METAL CHIP	120K	0.50%	1/16W
R510	1-218-843-11	METAL CHIP	680	0.50%	1/16W
R511	1-216-813-11	METAL CHIP	220	5%	1/16W
R512	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R513	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
R514	1-218-875-11	METAL CHIP	15K	0.50%	1/16W
R515	1-218-843-11	METAL CHIP	680	0.50%	1/16W
R516	1-216-298-00	METAL CHIP	2.2	5%	1/10W
R517	1-218-877-11	METAL CHIP	18K	0.50%	1/16W
R519	1-216-818-11	METAL CHIP	560	5%	1/16W
R520	1-218-867-11	METAL CHIP	6.8K	0.50%	1/16W
R521	1-216-837-11	METAL CHIP	22K	5%	1/16W
R522	1-218-881-11	METAL CHIP	27K	0.50%	1/16W
R523	1-216-818-11	METAL CHIP	560	5%	1/16W
R524	1-218-897-11	METAL CHIP	120K	0.50%	1/16W
R525	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R526	1-218-865-11	METAL CHIP	5.6K	0.50%	1/16W
R527	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W
R528	1-218-843-11	METAL CHIP	680	0.50%	1/16W
R529	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R530	1-216-051-00	METAL CHIP	1.2K	5%	1/10W
R531	1-216-833-11	METAL CHIP	10K	5%	1/16W
R532	1-216-833-11	METAL CHIP	10K	5%	1/16W
R533	1-216-833-11	METAL CHIP	10K	5%	1/16W
R534	1-216-810-11	METAL CHIP	120	5%	1/16W
R535	1-216-845-11	METAL CHIP	100K	5%	1/16W
R536	1-216-833-11	METAL CHIP	10K	5%	1/16W
R537	1-216-837-11	METAL CHIP	22K	5%	1/16W
R538	1-216-820-11	METAL CHIP	820	5%	1/16W
R539	1-216-864-11	METAL CHIP	0	5%	1/16W
R540	1-216-821-11	METAL CHIP	1K	5%	1/16W

< VARIABLE RESISTOR >

RV301	1-223-733-21	RES, VAR, CARBON 10K

< SWITCH >

S301	1-762-442-21	SWITCH, ROTARY
S302	1-572-467-21	SWITCH, PUSH (1 KEY)

< TRANSFORMER >

⚠T501	1-427-941-21	TRANSFORMER, CONVERTER
⚠T502	1-429-547-11	TRANSFORMER, INVERTER

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

SD-21

Ref. No.	Part No.	Description	Remarks
	A-7072-500-A	SD-21 BOARD, COMPLETE	(TRV11/TRV21)
		**********************	
	A-7072-526-A	SD-21P BOARD, COMPLETE	(TRV11E/TRV21E)
		**********************	
			(Ref.No.8,000 Series)
		< CAPACITOR >	
C102	1-164-217-11	CERAMIC CHIP 150PF 5% 50V	
C103	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C104	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C108	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C109	1-104-752-11	TANTAL. CHIP 33uF 20% 6.3V	
C110	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C111	1-162-969-11	CERAMIC CHIP 0.0068uF 10% 25V	
C112	1-135-149-21	TANTALUM CHIP 2.2uF 20% 10V	
C114	1-216-864-11	METAL CHIP 0 5% 1/16W	
C116	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C118	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C119	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C121	1-164-471-11	CERAMIC CHIP 680PF 5% 50V	(TRV11E/TRV21E)
C124	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C125	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)
C126	1-165-176-11	CERAMIC CHIP 0.047uF 10% 16V	
C128	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C129	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV11E/TRV21E)
C130	1-162-926-11	CERAMIC CHIP 82PF 5% 50V	(TRV11E/TRV21E)
C131	1-107-826-11	CERAMIC CHIP 0.1uF 10% 16V	
C134	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	
C135	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C136	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C137	1-107-823-11	CERAMIC CHIP 0.47uF 10% 16V	
C139	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C140	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C141	1-107-682-11	CERAMIC CHIP 1uF 10% 16V	
C143	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C144	1-104-852-11	TANTAL. CHIP 22uF 20% 10V	
C145	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
		< CONNECTOR >	
CN101	1-766-677-21	CONNECTOR, FFC/FPC 16P	
CN102	1-770-625-21	PIN, CONNECTOR 8P	
		< DIODE >	
D101	8-713-102-80	DIODE 1T369-01-T8A	(TRV11E/TRV21E)
D102	8-719-420-51	DIODE MA729	
		< IC >	
IC101	8-759-355-92	IC AK9813AF-E2	
IC102	8-752-067-59	IC CXA1785R-T4	

Ref. No.	Part No.	Description	Remarks
		< COIL >	
L101	1-412-030-11	INDUCTOR CHIP 22uH	
L103	1-412-956-21	INDUCTOR 27uH	(TRV11E/TRV21E)
		< TRANSISTOR >	
Q101	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q102	8-729-230-63	TRANSISTOR 2SC4116-YG	(TRV11E/TRV21E)
		< RESISTOR >	
R102	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R103	1-216-819-11	METAL CHIP 680 5% 1/16W	
R104	1-216-849-11	METAL CHIP 220K 5% 1/16W	
R105	1-216-818-11	METAL CHIP 560 5% 1/16W	
R108	1-216-838-11	METAL CHIP 27K 5% 1/16W	
R109	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R110	1-216-842-11	METAL CHIP 56K 5% 1/16W	
R111	1-216-817-11	METAL CHIP 470 5% 1/16W	
R113	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R114	1-218-877-11	METAL CHIP 18K 0.50% 1/16W	
R115	1-216-854-11	METAL CHIP 560K 5% 1/16W	
R116	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R117	1-216-818-11	METAL CHIP 560 5% 1/16W	
R118	1-216-864-11	METAL CHIP 0 5% 1/16W	
R119	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R120	1-216-864-11	METAL CHIP 0 5% 1/16W	
R121	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R122	1-216-843-11	METAL CHIP 68K 5% 1/16W	
R123	1-216-864-11	METAL CHIP 0 5% 1/16W	
R125	1-216-851-11	METAL CHIP 330K 5% 1/16W	
R126	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R127	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R128	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R129	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R130	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R131	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R132	1-220-397-11	METAL GLAZE 4.7M 5% 1/16W	(TRV11E/TRV21E)
R134	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R135	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R136	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV11E/TRV21E)
R137	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R138	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R139	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R140	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R141	1-216-831-11	METAL CHIP 6.8K 5% 1/16W	(TRV11E/TRV21E)
R142	1-216-837-11	METAL CHIP 22K 5% 1/16W	(TRV11E/TRV21E)
R143	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R144	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R145	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	(TRV11/TRV21)
R145	1-216-819-11	METAL CHIP 680 5% 1/16W	(TRV11E/TRV21E)

Ref. No.	Part No.	Description				Remarks
R146	1-216-844-11	METAL CHIP	82K	5%	1/16W	(TRV11/TRV21)
R146	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV11E/TRV21E)
R147	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	(TRV11E/TRV21E)
R148	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R149	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TRV11E/TRV21E)
R150	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TRV11E/TRV21E)
R151	1-216-809-11	METAL CHIP	100	5%	1/16W	
R152	1-216-809-11	METAL CHIP	100	5%	1/16W	
R153	1-216-809-11	METAL CHIP	100	5%	1/16W	
R154	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TRV11E/TRV21E)
R155	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	(TRV11/TRV21)
R156	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TRV11/TRV21)
R157	1-216-840-11	METAL CHIP	39K	5%	1/16W	
R158	1-216-839-11	METAL CHIP	33K	5%	1/16W	

< VIBRATOR >

X101	1-579-466-11	VIBRATOR, CRYSTAL 3.58MHz	(TRV11/TRV21)
X101	1-579-661-21	OSCILLATOR,CRYSTAL 4.43MHz	(TRV11E/TRV21E)

A-7072-504-A TZ-5 BOARD, COMPLETE (TRV21/TRV21E)
****

(Ref.No.5,000 Series)

< CAPACITOR >

C650	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C651	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C652	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C653	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C654	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C655	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C656	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C657	1-164-299-11	CERAMIC CHIP	0.22uF	10%	25V
C658	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C659	1-164-245-11	CERAMIC CHIP	0.015uF	10%	25V
C660	1-128-257-21	ELECT CHIP	33uF	20%	10V
C661	1-128-257-21	ELECT CHIP	33uF	20%	10V
C663	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C664	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C665	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C666	1-110-501-11	CERAMIC CHIP	0.33uF	10%	16V
C668	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C669	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C672	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C673	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C674	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C675	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V

< CONNECTOR >

CN650	1-764-526-11	CONNECTOR, FFC/FPC (ZIF) 18P

< IC >

IC650	8-759-080-34	IC	TA75W01FU-TE12R
IC651	8-759-388-63	IC	NJU7064V(TE2)
IC652	8-759-234-77	IC	TC4S66F
IC653	8-759-234-77	IC	TC4S66F
IC655	8-752-855-05	IC	CXP81120-024R

< COIL >

L650	1-414-078-11	INDUCTOR 10uH
L652	1-412-058-11	INDUCTOR CHIP 10uH

< TRANSISTOR >

Q650	8-729-402-42	TRANSISTOR	UN5213

< RESISTOR >

R650	1-216-837-11	METAL CHIP	22K	5%	1/16W
R651	1-216-837-11	METAL CHIP	22K	5%	1/16W
R652	1-216-837-11	METAL CHIP	22K	5%	1/16W
R653	1-216-837-11	METAL CHIP	22K	5%	1/16W
R654	1-216-837-11	METAL CHIP	22K	5%	1/16W
R655	1-216-837-11	METAL CHIP	22K	5%	1/16W
R656	1-216-803-11	METAL CHIP	33	5%	1/16W
R658	1-216-833-11	METAL CHIP	10K	5%	1/16W
R659	1-216-833-11	METAL CHIP	10K	5%	1/16W
R660	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R661	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R662	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R663	1-218-911-11	METAL CHIP	470K	0.50%	1/16W
R664	1-218-871-11	METAL CHIP	10K	0.50%	1/16W
R665	1-216-857-11	METAL CHIP	1M	5%	1/16W
R666	1-216-857-11	METAL CHIP	1M	5%	1/16W
R667	1-218-871-11	METAL CHIP	10K	0.50%	1/16W
R668	1-216-835-11	METAL CHIP	15K	5%	1/16W
R669	1-216-835-11	METAL CHIP	15K	5%	1/16W
R670	1-216-845-11	METAL CHIP	100K	5%	1/16W
R672	1-216-845-11	METAL CHIP	100K	5%	1/16W
R673	1-216-821-11	METAL CHIP	1K	5%	1/16W
R674	1-216-845-11	METAL CHIP	100K	5%	1/16W
R675	1-216-821-11	METAL CHIP	1K	5%	1/16W
R676	1-216-857-11	METAL CHIP	1M	5%	1/16W
R682	1-218-885-11	METAL CHIP	39K	0.50%	1/16W
R683	1-218-891-11	METAL CHIP	68K	0.50%	1/16W
R684	1-218-885-11	METAL CHIP	39K	0.50%	1/16W
R685	1-218-891-11	METAL CHIP	68K	0.50%	1/16W
R688	1-216-864-11	METAL CHIP	0	5%	1/16W
R689	1-216-864-11	METAL CHIP	0	5%	1/16W

TZ-5 VC-167

< SENSOR >

Ref. No.	Part No.	Description	Remarks
SE650	1-810-725-81	SENSOR, ANGULAR VELOCITY	
SE651	1-810-725-71	SENSOR, ANGULAR VELOCITY	

< VIBRATOR >

Ref. No.	Part No.	Description	Remarks
X650	1-579-553-11	VIBRATOR 12MHz	

A-7092-817-A VC-167 BOARD, COMPLETE (TRV11)
****

A-7092-819-A VC-167 BOARD, COMPLETE (TRV21)
****

A-7092-818-A VC-167P BOARD, COMPLETE (TRV11E)
****

A-7092-820-A VC-167P BOARD, COMPLETE (TRV21E)
****

(Ref.No.1,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description			Remarks
C061	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C069	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C072	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C073	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C075	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C076	1-109-996-11	CERAMIC CHIP	1uF		6.3V
C077	1-164-346-11	CERAMIC CHIP	1uF		16V
C078	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C101	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C102	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C103	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C104	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C106	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C107	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C108	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C109	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C110	1-164-217-11	CERAMIC CHIP	150PF	5%	50V
C111	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C112	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C113	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C114	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C115	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C117	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C118	1-110-569-11	TANTAL. CHIP	47uF	20%	6.3V
C119	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C120	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C121	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C122	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C123	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C124	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV11E/TRV21E)
C125	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C127	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV11E/TRV21E)
C129	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V (TRV11/TRV21)
C129	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TRV11E/TRV21E)
C130	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C134	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C135	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C136	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C137	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C138	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C139	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C140	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C141	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V
C142	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C143	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C148	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C149	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C150	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C152	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C153	1-162-916-11	CERAMIC CHIP	12PF	5%	50V
C154	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C155	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV11E/TRV21E)
C156	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C157	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
C160	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C162	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C163	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C164	1-162-922-11	CERAMIC CHIP	39PF	5%	50V
C165	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C166	1-162-958-11	CERAMIC CHIP	270PF	5%	50V
C167	1-162-927-11	CERAMIC CHIP	100PF	5%	50V
C168	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C169	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C170	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C171	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C202	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C203	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V (TRV11/TRV11E)
C204	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C205	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C206	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C207	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C208	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C209	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C210	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C211	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C212	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C213	1-104-852-11	TANTAL. CHIP	22uF	20%	6.3V
C214	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C215	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C216	1-113-996-11	TANTAL. CHIP	220uF	20%	4V
C217	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C218	1-162-927-11	CERAMIC CHIP	100PF	5%	50V

Ref. No.	Part No.	Description			Remarks
C219	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C220	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V (TRV11/TRV21)
C221	1-164-156-11	CERAMIC CHIP	0.1uF		25V (TRV11E/TRV21E)
C223	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C224	1-164-005-11	CERAMIC CHIP	0.47uF		25V
C225	1-164-218-11	CERAMIC CHIP	180PF	0.25PF	50V (TRV11/TRV21)
C225	1-162-928-11	CERAMIC CHIP	120PF	5%	50V (TRV11E/TRV21E)
C226	1-162-957-11	CERAMIC CHIP	220PF	5%	50V (TRV11E/TRV21E)
C227	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C228	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V (TRV21/TRV21E)
C229	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C230	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
C231	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C232	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C233	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C234	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C235	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C236	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C237	1-162-957-11	CERAMIC CHIP	220PF	5%	50V (TRV11/TRV21)
C237	1-162-966-11	CERAMIC CHIP	0.0022uF	10%	50V (TRV11E/TRV21E)
C238	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V (TRV11/TRV21)
C238	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V (TRV11E/TRV21E)
C240	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C242	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C243	1-162-925-11	CERAMIC CHIP	68PF	5%	50V (TRV11/TRV21)
C243	1-162-916-11	CERAMIC CHIP	12PF	5%	50V (TRV11E/TRV21E)
C244	1-164-315-11	CERAMIC CHIP	470PF	5%	50V (TRV11/TRV21)
C244	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV11E/TRV21E)
C245	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C246	1-135-073-00	TANTALUM CHIP	0.33uF	10%	35V
C247	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (TRV11E/TRV21E)
C248	1-162-923-11	CERAMIC CHIP	47PF	5%	50V (TRV11E/TRV21E)
C249	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C252	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C254	1-162-975-11	CERAMIC CHIP	24PF	5%	50V (TRV11/TRV21)
C254	1-164-237-11	CERAMIC CHIP	16PF	5%	50V (TRV11E/TRV21E)
C256	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C257	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C259	1-162-927-11	CERAMIC CHIP	100PF	5%	50V (TRV11/TRV21)
C260	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C263	1-162-920-11	CERAMIC CHIP	27PF	5%	50V (TRV11E)
C263	1-162-919-11	CERAMIC CHIP	22PF	5%	50V (TRV11/TRV21)
C265	1-162-926-11	CERAMIC CHIP	82PF	5%	50V (TRV11/TRV11E/TRV21)
C266	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V (TRV11/TRV11E/TRV21)
C267	1-162-917-11	CERAMIC CHIP	15PF	5%	50V
C268	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V (TRV11/TRV21)
C269	1-162-921-11	CERAMIC CHIP	33PF	5%	50V (TRV11E/TRV21E)
C270	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C271	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C400	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C401	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V
C402	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C403	1-162-912-11	CERAMIC CHIP	7PF	0.5PF	50V
C404	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C405	1-162-907-11	CERAMIC CHIP	2PF	0.25PF	50V
C406	1-109-996-11	CERAMIC CHIP	1uF		6.3V
C407	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C408	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C409	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TRV11E/TRV21E)
C411	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C412	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C413	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V (TRV11E/TRV21E)
C414	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C415	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C416	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C417	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C418	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C419	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C420	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C421	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C423	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C424	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C425	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C426	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C427	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C428	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C429	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C430	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C431	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C432	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C433	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C434	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C435	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C436	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C437	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C438	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C439	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C441	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C442	1-165-112-11	CERAMIC CHIP	0.33uF		16V
C443	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C444	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C445	1-164-156-11	CERAMIC CHIP	0.1uF		25V

Ref. No.	Part No.	Description			Remarks
C446	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C447	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C448	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C449	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C450	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
C451	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C452	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V
C453	1-162-968-11	CERAMIC CHIP	0.0047uF	10%	50V
C456	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C458	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C504	1-163-009-11	CERAMIC CHIP	0.001uF	10%	50V
C505	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C508	1-164-816-11	CERAMIC CHIP	220PF	2%	50V
					(TRV11/TRV21)
C513	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C515	1-135-145-11	TANTALUM CHIP	0.47uF	10%	35V
C520	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C521	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C522	1-115-412-11	CERAMIC CHIP	680PF	5%	25V
C523	1-124-778-00	ELECT CHIP	22uF	20%	6.3V
C525	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C526	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C529	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C531	1-104-908-11	TANTAL. CHIP	47uF	20%	4V
C532	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C533	1-216-864-11	METAL CHIP	0 5%	1/16W	
C534	1-164-182-11	CERAMIC CHIP	0.0033uF	10%	50V
C535	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C537	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C540	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C543	1-135-155-21	TANTALUM CHIP	4.7uF	10%	16V
C546	1-126-205-11	ELECT CHIP	47uF	20%	6.3V
C548	1-135-217-21	TANTALUM CHIP	15uF	20%	6.3V
C550	1-104-847-11	TANTAL. CHIP	22uF	20%	4V
C554	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C555	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C556	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C557	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C558	1-109-982-11	CERAMIC CHIP	1uF	10%	10V
C561	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C571	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
					(TRV11E/TRV21E)
C572	1-164-392-11	CERAMIC CHIP	390PF	5%	50V
					(TRV11E/TRV21E)
C573	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
					(TRV11E/TRV21E)
C574	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
					(TRV11E/TRV21E)
C575	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
					(TRV11E/TRV21E)
C576	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
					(TRV11E/TRV21E)
C577	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
					(TRV11E/TRV21E)
C578	1-107-682-11	CERAMIC CHIP	1uF	10%	16V
					(TRV11E/TRV21E)

Ref. No.	Part No.	Description			Remarks
C602	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C603	1-164-677-11	CERAMIC CHIP	0.033uF	10%	16V
C604	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C605	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C606	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C607	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C608	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C609	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C610	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C611	1-135-181-21	TANTALUM CHIP	4.7uF	20%	6.3V
C612	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C613	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C614	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C615	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C616	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C618	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C619	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C620	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C701	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C702	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C703	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C704	1-164-346-11	CERAMIC CHIP	1uF		16V
C706	1-135-214-21	TANTAL. CHIP	4.7uF	20%	20V
C707	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C708	1-164-232-11	CERAMIC CHIP	0.01uF		50V
C710	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C711	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C712	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C713	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C714	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C715	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C717	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C718	1-162-919-11	CERAMIC CHIP	22PF	5%	50V
C719	1-164-489-11	CERAMIC CHIP	0.22uF	10%	16V
C720	1-162-923-11	CERAMIC CHIP	47PF	5%	50V
C722	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C724	1-162-924-11	CERAMIC CHIP	56PF	5%	50V
					(TRV11/TRV11E)
C724	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
					(TRV21/TRV21E)
C725	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C726	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C727	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C728	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C729	1-107-823-11	CERAMIC CHIP	0.47uF	10%	16V
C730	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C731	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C732	1-164-004-11	CERAMIC CHIP	0.1uF	10%	25V
C734	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C735	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C736	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C739	1-162-921-11	CERAMIC CHIP	33PF	5%	50V
					(TRV11E/TRV21E)

Ref. No.	Part No.	Description	Remarks
C740	1-164-315-11	CERAMIC CHIP 470PF 2% 50V	(TRV11E/TRV21E)
C741	1-135-148-21	TANTAL. CHIP 1.5uF 20% 10V	(TRV11E/TRV21E)
C742	1-164-156-11	CERAMIC CHIP 0.1uF 25V	(TRV11E/TRV21E)
C745	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C746	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C749	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C750	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C751	1-164-346-11	CERAMIC CHIP 1uF 16V	
C754	1-162-915-11	CERAMIC CHIP 10PF 0.5PF 50V	
C755	1-164-346-11	CERAMIC CHIP 1uF 16V	
C757	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
C758	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	
C759	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
C760	1-135-259-11	TANTAL. CHIP 10uF 20% 6.3V	(TRV21/TRV21E)
C761	1-162-970-11	CERAMIC CHIP 0.01uF 10% 25V	(TRV21/TRV21E)
C764	1-162-928-11	CERAMIC CHIP 120PF 5% 50V	(TRV11/TRV21)
C765	1-162-919-11	CERAMIC CHIP 22PF 5% 50V	(TRV11/TRV21)
C772	1-135-181-21	TANTALUM CHIP 4.7uF 20% 6.3V	
		< CONNECTOR >	
CN060	1-691-350-21	CONNECTOR, FFC/FPC (ZIF) 12P	
CN101	1-774-636-21	CONNECTOR, FFC/FPC 11P	
CN102	1-764-708-21	CONNECTOR, FFC/FPC (LIF) 9P	
CN300	1-774-054-21	CONNECTOR, FFC/FPC (ZIF) 45P	
* CN301	1-691-931-11	CONNECTOR, BOARD TO BOARD 38P	
CN400	1-774-635-21	CONNECTOR, FFC/FPC 10P	
CN401	1-766-673-21	CONNECTOR, FFC/FPC 12P	
CN402	1-774-639-21	CONNECTOR, FFC/FPC 15P	
CN403	1-766-644-21	CONNECTOR, FFC/FPC 8P	
CN501	1-764-707-21	CONNECTOR, FFC/FPC (LIF) 8P	
CN601	1-764-529-11	CONNECTOR, FFC/FPC (ZIF) 22P	
CN701	1-750-630-11	CONNECTOR, FFC/FPC (ZIF) 16P	
CN702	1-774-641-21	CONNECTOR, FFC/FPC 18P	(TRV21/TRV21E)
		< DIODE >	
D101	8-719-404-49	DIODE MA111	
D102	8-719-820-41	DIODE 1SS302	
D103	8-719-027-50	DIODE MA142WK	
D201	8-719-027-50	DIODE MA142WK	
D202	8-719-404-49	DIODE MA111	(TRV11E/TRV21E)
D203	8-719-027-48	DIODE MA142WA	
D701	8-719-027-48	DIODE MA142WA	
D702	8-719-404-49	DIODE MA111	
D703	8-719-404-49	DIODE MA111	
D705	8-719-002-81	DIODE 1T363	(TRV11E/TRV21E)
D706	8-713-102-28	DIODE 1T379-04-T8A	

Ref. No.	Part No.	Description	Remarks
		< IC >	
IC061	8-759-290-12	IC M62370GP-650D	
IC101	8-752-071-48	IC CXA2002R	
IC201	8-752-075-45	IC CXA2051R	
IC202	8-759-035-90	IC SC7S02F	
IC204	8-759-234-20	IC TC7S08F	
IC400	8-752-870-27	IC CXP87460-008R	
IC401	8-759-278-57	IC AK6420HF-E2	
IC402	8-759-267-62	IC MB4470APFQ-G-BND-ER	
IC403	8-759-327-67	IC LB1950V-TLM	
IC404	8-759-327-61	IC LB8112V-TLM	(TRV11/TRV21)
IC404	8-759-327-62	IC TA8482FN-EL	(TRV11E/TRV21E)
IC405	8-759-234-20	IC TC7S08F	
IC501	8-752-075-66	IC CXA1837R	
IC570	8-759-334-09	IC CXA2003N	(TRV11E/TRV21E)
IC601	8-759-337-40	IC NJM2904V(TE2)	
IC602	8-759-337-41	IC NJM2902V(TE2)	
IC603	8-759-247-07	IC MPC17A34VMEL	
IC604	8-752-365-65	IC CXD2126N-T4	
IC701	8-752-372-14	IC CXD1267AN-T4	
IC702	8-752-374-25	IC CXD2415R-T4	
IC703	8-752-073-11	IC CXA2006Q-T4	
IC704	8-759-329-83	IC AD43063-REEL	
IC705	8-752-374-02	IC CXD2418R-T4	
IC706	8-752-379-66	IC CXD2180AR-T6	
IC707	8-759-297-76	IC CXD2152AREL	(TRV21/TRV21E)
IC708	8-759-337-40	IC NJM2904V(TE2)	
IC709	8-759-198-34	IC TA75S558F(TE85R)	(TRV11E/TRV21E)
IC710	8-759-198-34	IC TA75S558F(TE85R)	
		< COIL >	
L061	1-412-064-11	INDUCTOR CHIP 100uH	
L062	1-414-078-11	INDUCTOR 10uH	
L063	1-412-052-21	INDUCTOR CHIP 1uH	
L101	1-412-066-21	INDUCTOR CHIP 220uH	
L102	1-412-066-21	INDUCTOR CHIP 220uH	
L103	1-412-066-21	INDUCTOR CHIP 220uH	
L104	1-412-952-11	INDUCTOR 12uH	
L105	1-412-060-11	INDUCTOR CHIP 22uH	
L106	1-412-957-11	INDUCTOR 33uH	
L107	1-412-280-31	INDUCTOR 330uH	
L108	1-412-282-41	INDUCTOR 470uH	
L109	1-412-355-41	INDUCTOR 180uH	
L113	1-414-078-11	INDUCTOR 10uH	
L114	1-412-355-41	INDUCTOR 180uH	
L115	1-412-957-11	INDUCTOR 33uH	
L116	1-414-078-11	INDUCTOR 10uH	
L118	1-414-373-31	INDUCTOR CHIP 10uH	
L118	1-414-373-61	INDUCTOR CHIP 10uH	
L119	1-412-950-11	INDUCTOR 8.2uH	
L120	1-410-658-31	INDUCTOR CHIP 220uH	

VC-167

Ref. No.	Part No.	Description	Remarks
L121	1-410-655-31	INDUCTOR CHIP 120uH	
L202	1-412-064-11	INDUCTOR CHIP 100uH	
L203	1-412-962-11	INDUCTOR 82uH	
L205	1-412-955-11	INDUCTOR 22uH (TRV11/TRV21)	
L207	1-412-962-11	INDUCTOR 82uH	
L210	1-412-951-11	INDUCTOR 10uH (TRV11E)	
L210	1-412-955-11	INDUCTOR 22uH (TRV11/TRV21)	
L211	1-412-058-11	INDUCTOR CHIP 10uH	
L212	1-412-058-11	INDUCTOR CHIP 10uH	
L213	1-414-170-41	INDUCTOR 100uH (TRV11/TRV21)	
L213	1-414-196-41	INDUCTOR 47uH (TRV11E/TRV21E)	
L214	1-412-056-11	INDUCTOR CHIP 4.7uH	
L215	1-412-962-11	INDUCTOR 82uH	
L216	1-414-170-41	INDUCTOR 100uH (TRV11E/TRV21E)	
L400	1-412-058-11	INDUCTOR CHIP 10uH	
L401	1-412-951-11	INDUCTOR 10uH	
L402	1-216-295-91	CONDUCTOR, CHIP (2012)	
L570	1-414-078-11	INDUCTOR 10uH (TRV11E/TRV21E)	
L601	1-412-058-11	INDUCTOR CHIP 10uH	
L602	1-412-058-11	INDUCTOR CHIP 10uH	
L603	1-412-951-11	INDUCTOR 10uH	
L701	1-412-058-11	INDUCTOR CHIP 10uH	
L703	1-414-078-11	INDUCTOR 10uH	
L704	1-412-058-11	INDUCTOR CHIP 10uH	
L706	1-412-058-11	INDUCTOR CHIP 10uH	
L707	1-412-979-21	INDUCTOR 1uH	
L708	1-412-979-21	INDUCTOR 1uH	
L709	1-412-052-21	INDUCTOR CHIP 1uH	
L710	1-412-052-21	INDUCTOR CHIP 1uH	
L712	1-414-078-11	INDUCTOR 10uH	
L714	1-412-058-11	INDUCTOR CHIP 10uH	
L715	1-414-078-11	INDUCTOR 10uH	
L716	1-414-078-11	INDUCTOR 10uH (TRV21/TRV21E)	
L751	1-414-078-11	INDUCTOR 10uH	
L752	1-414-196-41	INDUCTOR 47uH (TRV11/TRV21)	
L753	1-414-196-41	INDUCTOR 47uH (TRV11/TRV21)	
		< TRANSISTOR >	
Q060	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q061	8-729-101-07	TRANSISTOR 2SB798-DL	
Q062	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q063	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q064	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q065	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q101	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q102	8-729-402-48	TRANSISTOR UN521E-TX	
Q104	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q106	8-729-905-23	TRANSISTOR 2SA1576-R	
Q107	8-729-824-02	TRANSISTOR 2SA1838	
Q108	8-729-402-42	TRANSISTOR UN5213	
Q109	8-729-402-42	TRANSISTOR UN5213	
Q110	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q111	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q112	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q113	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q114	8-729-402-42	TRANSISTOR UN5213(TRV11E/TRV21E)	
Q120	8-729-403-35	TRANSISTOR UN5113	
Q123	8-729-015-74	TRANSISTOR UN5111-TX	
Q124	8-729-117-73	TRANSISTOR 2SC4178-F14	
Q125	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q126	8-729-402-42	TRANSISTOR UN5213(TRV11E/TRV21E)	
Q129	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q130	8-729-012-50	TRANSISTOR 2SC4400-3/4/5	
Q131	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q202	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q206	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q208	8-729-402-42	TRANSISTOR UN5213	
Q211	8-729-420-24	TRANSISTOR 2SB1218A-QRS(TRV11/TRV21)	
Q212	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q213	8-729-402-42	TRANSISTOR UN5213	
Q214	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q215	8-729-013-15	TRANSISTOR 2SC4909-TL	
Q216	8-729-420-20	TRANSISTOR XN4312	
Q217	8-729-420-12	TRANSISTOR XN4213	
Q218	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q219	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q221	8-729-402-42	TRANSISTOR UN5213	
Q222	8-729-402-42	TRANSISTOR UN5213 (TRV11E/TRV21E)	
Q223	8-729-230-63	TRANSISTOR 2SC4116-YG (TRV11/TRV11E/TRV21)	
Q224	8-729-420-24	TRANSISTOR 2SB1218A-QRS (TRV11/TRV11E/TRV21)	
Q226	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q227	8-729-013-15	TRANSISTOR 2SC4909-TL	
Q228	8-729-403-35	TRANSISTOR UN5113	
Q229	8-729-402-42	TRANSISTOR UN5213	
Q400	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q401	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q501	8-729-420-53	TRANSISTOR UN5115	
Q507	8-729-421-26	TRANSISTOR UN5214	
Q570	8-729-402-42	TRANSISTOR UN5213 (TRV11E/TRV21E)	
Q601	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q602	8-729-230-63	TRANSISTOR 2SC4116-YG	
Q603	8-729-420-53	TRANSISTOR UN5115	
Q701	8-729-403-27	TRANSISTOR XN4401	
Q703	8-729-402-42	TRANSISTOR UN5213	
Q704	8-729-403-35	TRANSISTOR UN5113	
Q705	8-729-403-35	TRANSISTOR UN5113	
Q706	8-729-402-42	TRANSISTOR UN5213	
Q750	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q752	8-729-420-24	TRANSISTOR 2SB1218A-QRS	
Q753	8-729-013-15	TRANSISTOR 2SC4909-TL (TRV11/TRV21)	
Q754	8-729-013-15	TRANSISTOR 2SC4909-TL (TRV11/TRV21)	

Ref. No.	Part No.	Description	Remarks
		< RESISTOR >	
R062	1-216-864-11	METAL CHIP 0 5% 1/16W	
R063	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R077	1-216-138-00	METAL CHIP 3.3 5% 1/8W	
R078	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R079	1-216-820-11	METAL CHIP 820 5% 1/16W	
R080	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R081	1-216-818-11	METAL CHIP 560 5% 1/16W	
R082	1-216-822-11	METAL CHIP 1.2K 5% 1/16W	
R083	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R084	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R085	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R086	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R087	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R088	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R091	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R092	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R094	1-216-864-11	METAL CHIP 0 5% 1/16W	
R101	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	(TRV11E/TRV21E)
R102	1-216-815-11	METAL CHIP 330 5% 1/16W	
R103	1-216-815-11	METAL CHIP 330 5% 1/16W	
R104	1-216-797-11	METAL CHIP 10 5% 1/16W	
R105	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R106	1-218-875-11	METAL CHIP 15K 0.50% 1/16W	
R107	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R108	1-216-864-11	METAL CHIP 0 5% 1/16W	
R109	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R110	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R111	1-216-832-11	METAL CHIP 8.2K 5% 1/16W	
R114	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R115	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R116	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R117	1-216-847-11	METAL CHIP 150K 5% 1/16W	
R120	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R121	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R122	1-216-818-11	METAL CHIP 560 5% 1/16W	
R123	1-216-815-11	METAL CHIP 330 5% 1/16W	
R125	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R126	1-216-797-11	METAL CHIP 10 5% 1/16W	
R127	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R128	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R129	1-216-819-11	METAL CHIP 680 5% 1/16W	
R130	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R131	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R132	1-216-813-11	METAL CHIP 220 5% 1/16W	
R133	1-216-818-11	METAL CHIP 560 5% 1/16W	
R134	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R141	1-216-816-11	METAL CHIP 390 5% 1/16W	
R149	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R150	1-216-826-11	METAL CHIP 2.7K 5% 1/16W	
R152	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R153	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R154	1-216-817-11	METAL CHIP 470 5% 1/16W	
R155	1-216-807-11	METAL CHIP 68 5% 1/16W	
R156	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R157	1-216-816-11	METAL CHIP 390 5% 1/16W	
R158	1-216-819-11	METAL CHIP 680 5% 1/16W	
R159	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV21)
R159	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	(TRV11E/TRV21E)
R160	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R161	1-216-864-11	METAL CHIP 0 5% 1/16W	
R162	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R163	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R164	1-216-864-11	METAL CHIP 0 5% 1/16W	
R165	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R166	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R167	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R168	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R169	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV21)
R169	1-216-804-11	METAL CHIP 39 5% 1/16W	(TRV11E/TRV21E)
R170	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R171	1-216-840-11	METAL CHIP 39K 5% 1/16W	
R172	1-216-835-11	METAL CHIP 15K 5% 1/16W	
R173	1-216-864-11	METAL CHIP 0 5% 1/16W	
R176	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	(TRV11/TRV21)
R176	1-216-824-11	METAL CHIP 1.8K 5% 1/16W	(TRV11E/TRV21E)
R177	1-216-821-11	METAL CHIP 1K 5% 1/16W	(TRV11E/TRV21E)
R178	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R179	1-216-817-11	METAL CHIP 470 5% 1/16W	
R180	1-216-818-11	METAL CHIP 560 5% 1/16W	
R181	1-216-818-11	METAL CHIP 560 5% 1/16W	
R182	1-216-809-11	METAL CHIP 100 5% 1/16W	
R183	1-216-818-11	METAL CHIP 560 5% 1/16W	
R184	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R185	1-216-818-11	METAL CHIP 560 5% 1/16W	
R186	1-216-818-11	METAL CHIP 560 5% 1/16W	
R187	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R188	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R189	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R190	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R191	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R192	1-216-814-11	METAL CHIP 270 5% 1/16W	
R193	1-216-813-11	METAL CHIP 220 5% 1/16W	
R194	1-216-803-11	METAL CHIP 33 5% 1/16W	
R196	1-216-818-11	METAL CHIP 560 5% 1/16W	
R197	1-216-864-11	METAL CHIP 0 5% 1/16W	
R201	1-216-833-11	METAL CHIP 10K 5% 1/16W	

VC-167

Ref. No.	Part No.	Description				Remarks
R202	1-216-836-11	METAL CHIP	18K	5%	1/16W	(TRV11/TRV11E)
R202	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV21/TRV21E)
R203	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	(TRV11E)
R203	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	(TRV11)
R204	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R206	1-216-815-11	METAL CHIP	330	5%	1/16W	(TRV11/TRV21)
R210	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV21)
R210	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV11/TRV11E)
R210	1-216-836-11	METAL CHIP	18K	5%	1/16W	(TRV21E)
R211	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	(TRV21)
R211	1-216-828-11	METAL CHIP	3.9K	5%	1/16W	(TRV21E)
R212	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R213	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R214	1-216-807-11	METAL CHIP	68	5%	1/16W	
R215	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R216	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R218	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R219	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R220	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R221	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R222	1-216-818-11	METAL CHIP	560	5%	1/16W	
R223	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R225	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R226	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TRV11E/TRV21E)
R228	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R229	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W	
R230	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R232	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R234	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R235	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R239	1-216-864-11	METAL CHIP	0	5%	1/16W	
R241	1-218-839-11	METAL GLAZE	470	0.50%	1/16W	
R243	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R244	1-216-843-11	METAL CHIP	68K	5%	1/16W	
R245	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV11/TRV21)
R246	1-216-864-11	METAL CHIP	0	5%	1/16W	
R247	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R248	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R249	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	(TRV11/TRV21)
R249	1-216-824-11	METAL CHIP	1.8K	5%	1/16W	(TRV11E/TRV21E)
R254	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R255	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R256	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R257	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R259	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R260	1-216-817-11	METAL CHIP	470	5%	1/16W	
R261	1-216-841-11	METAL CHIP	47K	5%	1/16W	(TRV11E/TRV21E)
R262	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV11E/TRV21E)
R263	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	(TRV11/TRV21)
R265	1-216-821-11	METAL CHIP	1K	5%	1/16W	(TRV11E)
R265	1-216-817-11	METAL CHIP	470	5%	1/16W	(TRV11/TRV21)
R266	1-216-864-11	METAL CHIP	0	5%	1/16W	
R267	1-216-864-11	METAL CHIP	0	5%	1/16W	
R268	1-216-818-11	METAL CHIP	560	5%	1/16W	(TRV11E)
R268	1-216-820-11	METAL CHIP	820	5%	1/16W	(TRV11/TRV21)
R270	1-216-817-11	METAL CHIP	470	5%	1/16W	(TRV11E/TRV21E)
R271	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	(TRV11E/TRV21E)
R272	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	(TRV11E/TRV21E)
R273	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R274	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R276	1-216-864-11	METAL CHIP	0	5%	1/16W	
R277	1-216-819-11	METAL CHIP	680	5%	1/16W	
R279	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	(TRV11/TRV11E/TRV21)
R281	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	
R282	1-216-823-11	METAL CHIP	1.5K	5%	1/16W	(TRV21E)
R283	1-216-819-11	METAL CHIP	680	5%	1/16W	(TRV11/TRV11E/TRV21)
R284	1-216-819-11	METAL CHIP	680	5%	1/16W	(TRV11/TRV11E/TRV21)
R286	1-216-836-11	METAL CHIP	18K	5%	1/16W	(TRV11/TRV11E/TRV21)
R287	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV11/TRV11E/TRV21)
R289	1-216-839-11	METAL CHIP	33K	5%	1/16W	(TRV11/TRV11E/TRV21)
R290	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV11E/TRV21E)
R291	1-216-864-11	METAL CHIP	0	5%	1/16W	
R292	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R293	1-216-817-11	METAL CHIP	470	5%	1/16W	
R294	1-216-822-11	METAL CHIP	1.2K	5%	1/16W	
R295	1-216-852-11	METAL CHIP	390K	5%	1/16W	
R296	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R297	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R298	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R299	1-218-272-11	METAL GLAZE	5.1K	5%	1/16W	
R301	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R302	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R303	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R304	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R305	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R314	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R315	1-218-290-11	METAL GLAZE	6.2K	5%	1/16W	
R316	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R317	1-218-290-11	METAL GLAZE	6.2K	5%	1/16W	
R318	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R319	1-216-853-11	METAL CHIP	470K	5%	1/16W	

Ref. No.	Part No.	Description				Remarks
R320	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R321	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R327	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R328	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R329	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R330	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R331	1-216-864-11	METAL CHIP	0	5%	1/16W	
R333	1-216-864-11	METAL CHIP	0	5%	1/16W	
R335	1-216-864-11	METAL CHIP	0	5%	1/16W	
R337	1-216-864-11	METAL CHIP	0	5%	1/16W	
R400	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R401	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R402	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R403	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R404	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R405	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R406	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R407	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R408	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R409	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R410	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R411	1-216-864-11	METAL CHIP	0	5%	1/16W	
R412	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R413	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R414	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R417	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R418	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R419	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R420	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R421	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R422	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R423	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R424	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R425	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R426	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R427	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R428	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R429	1-216-800-11	METAL GLAZE	18	5%	1/16W	
R430	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R434	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R435	1-216-864-11	METAL CHIP	0	5%	1/16W	
R436	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R437	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R439	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R440	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R441	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R442	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R443	1-216-837-11	METAL CHIP	22K	5%	1/16W	(TRV11/TRV21)
R444	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R445	1-216-833-11	METAL CHIP	10K	5%	1/16W	(TRV11/TRV21)
R445	1-216-864-11	METAL CHIP	0	5%	1/16W	(TRV11E/TRV21E)

Ref. No.	Part No.	Description				Remarks
R446	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R447	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R448	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R449	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R450	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R451	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R452	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R453	1-217-671-11	METAL CHIP	1	5%	1/10W	
R454	1-217-671-11	METAL CHIP	1	5%	1/10W	
R455	1-216-827-11	METAL CHIP	3.3K	5%	1/16W	
R456	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R458	1-217-671-11	METAL CHIP	1	5%	1/10W	
R459	1-217-671-11	METAL CHIP	1	5%	1/10W	
R460	1-217-671-11	METAL CHIP	1	5%	1/10W	
R461	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R462	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R463	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R464	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R465	1-216-808-11	METAL CHIP	82	5%	1/16W	
R466	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R467	1-216-019-00	METAL CHIP	56	5%	1/10W	
R468	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R469	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R471	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R472	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R473	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R474	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R475	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R476	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R477	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R478	1-216-821-11	METAL CHIP	1K	5%	1/16W	
R479	1-216-817-11	METAL CHIP	470	5%	1/16W	
R481	1-216-817-11	METAL CHIP	470	5%	1/16W	
R482	1-216-817-11	METAL CHIP	470	5%	1/16W	
R501	1-216-853-11	METAL CHIP	470K	5%	1/16W	
R503	1-216-864-11	METAL CHIP	0	5%	1/16W	
R505	1-216-810-11	METAL CHIP	120	5%	1/16W	
R506	1-218-893-11	METAL CHIP	82K	0.50%	1/16W	
R514	1-216-831-11	METAL CHIP	6.8K	5%	1/16W	
R515	1-216-864-11	METAL CHIP	0	5%	1/16W	
R517	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R519	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R520	1-216-864-11	METAL CHIP	0	5%	1/16W	
R522	1-216-817-11	METAL CHIP	470	5%	1/16W	
R523	1-216-825-11	METAL CHIP	2.2K	5%	1/16W	
R525	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R530	1-216-857-11	METAL CHIP	1M	5%	1/16W	
R531	1-216-817-11	METAL CHIP	470	5%	1/16W	
R534	1-216-864-11	METAL CHIP	0	5%	1/16W	
R537	1-216-864-11	METAL CHIP	0	5%	1/16W	

VC-167

Ref. No.	Part No.	Description	Remarks
R538	1-216-864-11	METAL CHIP 0 5% 1/16W	
R556	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R570	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV11E/TRV21E)
R571	1-218-871-11	METAL CHIP 10K 0.50% 1/16W	(TRV11E/TRV21E)
R575	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	(TRV11E/TRV21E)
R581	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)
R601	1-216-001-00	METAL CHIP 10 5% 1/10W	
R603	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R604	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R605	1-216-827-11	METAL CHIP 3.3K 5% 1/16W	
R606	1-216-836-11	METAL CHIP 18K 5% 1/16W	
R607	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R608	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R609	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R610	1-216-830-11	METAL CHIP 5.6K 5% 1/16W	
R611	1-216-815-11	METAL CHIP 330 5% 1/16W	
R612	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R613	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R614	1-216-834-11	METAL CHIP 12K 5% 1/16W	
R615	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R616	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R618	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R619	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R620	1-216-823-11	METAL CHIP 1.5K 5% 1/16W	
R621	1-216-833-11	METAL CHIP 10K 5% 1/16W	
R623	1-216-864-11	METAL CHIP 0 5% 1/16W	
R628	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R629	1-216-821-11	METAL CHIP 1K 5% 1/16W	
R630	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R631	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R632	1-216-848-11	METAL CHIP 180K 5% 1/16W	
R701	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R702	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R703	1-216-857-11	METAL CHIP 1M 5% 1/16W	
R704	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R706	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R707	1-216-845-11	METAL CHIP 100K 5% 1/16W	
R708	1-216-864-11	METAL CHIP 0 5% 1/16W	
R709	1-218-847-11	METAL CHIP 1K 0.50% 1/16W	
R710	1-218-876-11	METAL CHIP 16K 0.50% 1/16W	
R713	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)
R714	1-216-857-11	METAL CHIP 1M 5% 1/16W	(TRV11E/TRV21E)
R715	1-216-845-11	METAL CHIP 100K 5% 1/16W	(TRV11E/TRV21E)
R717	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	(TRV11E/TRV21E)
R719	1-216-810-11	METAL CHIP 120 5% 1/16W	
R720	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
R721	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R722	1-216-825-11	METAL CHIP 2.2K 5% 1/16W	
R723	1-164-156-11	CERAMIC CHIP 0.1uF 25V	
R724	1-216-810-11	METAL CHIP 120 5% 1/16W	
R725	1-216-864-11	METAL CHIP 0 5% 1/16W	
R726	1-216-846-11	METAL CHIP 120K 5% 1/16W	
R727	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R728	1-216-853-11	METAL CHIP 470K 5% 1/16W	
R729	1-216-864-11	METAL CHIP 0 5% 1/16W	
R730	1-216-864-11	METAL CHIP 0 5% 1/16W	
R732	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R733	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R734	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R735	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R740	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R741	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R742	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R743	1-216-839-11	METAL CHIP 33K 5% 1/16W	
R744	1-216-841-11	METAL CHIP 47K 5% 1/16W	
R745	1-216-837-11	METAL CHIP 22K 5% 1/16W	
R751	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	
R756	1-216-864-11	METAL CHIP 0 5% 1/16W	
R757	1-216-864-11	METAL CHIP 0 5% 1/16W	
R758	1-216-833-11	METAL CHIP 10K 5% 1/16W	(TRV11E/TRV21E)
R759	1-216-836-11	METAL CHIP 18K 5% 1/16W	(TRV11E/TRV21E)
R760	1-216-864-11	METAL CHIP 0 5% 1/16W	(TRV11/TRV21)
R761	1-216-813-11	METAL CHIP 220 5% 1/16W	(TRV11/TRV21)
R775	1-216-829-11	METAL CHIP 4.7K 5% 1/16W	

< SWITCH >

Ref. No.	Part No.	Description	Remarks
S301	1-692-088-41	SWITCH, TACTILE (EDIT SEARCH +)	
S302	1-692-088-41	SWITCH, TACTILE (EDIT SEARCH -)	
S303	1-692-088-41	SWITCH, TACTILE (PLAY)	
S304	1-692-088-41	SWITCH, TACTILE (PAUSE)	
S305	1-692-088-41	SWITCH, TACTILE (REW)	
S306	1-692-088-41	SWITCH, TACTILE (FF)	
S307	1-692-088-41	SWITCH, TACTILE (STOP)	

< VIBRATOR >

Ref. No.	Part No.	Description	Remarks
X400	1-760-314-11	VIBRATOR,CRYSTAL 11.718MHz	(TRV11/TRV21)
X400	1-760-315-11	VIBRATOR,CRYSTAL 11.718MHz	(TRV11E/TRV21E)
X701	1-760-320-11	VIBRATOR,CRYSTAL 28.375MHz	(TRV11/TRV21)
X701	1-760-321-11	VIBRATOR,CRYSTAL 28.375MHz	(TRV11E/TRV21E)
X702	1-579-780-21	VIBRATOR,CRYSTAL 17.7MHz	(TRV11E/TRV21E)

Ref. No.	Part No.	Description			Remarks
	A-7072-362-A	VF-102 BOARD, COMPLETE (TRV11/TRV21)			
		**********************			
	A-7072-357-A	VF-102P BOARD, COMPLETE (TRV11E/TRV21E)			
		**********************			
					(Ref.No.6,000 Series)
		< CAPACITOR >			
C902	1-163-038-91	CERAMIC CHIP	0.1uF		25V
C903	1-135-091-91	TANTAL. CHIP	1uF	20%	16V
C904	1-162-965-11	CERAMIC CHIP	0.0015uF	10%	50V
C905	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V
C906	1-162-638-11	CERAMIC CHIP	1uF		16V
C907	1-137-306-11	FILM CHIP	0.1uF	5%	16V
C908	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
⚠C910	1-164-758-11	CERAMIC CHIP	0.0039uF	5%	50V
⚠C911	1-164-715-11	CERAMIC CHIP	0.0068uF	5%	50V
C912	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
C914	1-128-007-11	ELECT CHIP	2.2uF	20%	35V
C915	1-163-037-11	CERAMIC CHIP	0.022uF	10%	25V
C916	1-164-611-11	CERAMIC CHIP	0.001uF	10%	500V
C917	1-165-319-11	CERAMIC CHIP	0.1uF		50V
C918	1-107-854-11	TANTAL. CHIP	68uF	20%	6.3V
		< CONNECTOR >			
CN901	1-566-537-11	CONNECTOR, FPC (NON ZIF) 5P			
CN902	1-573-290-21	PIN, CONNECTOR (1.5MM) (SMD) 4P			
		< DIODE >			
D901	8-719-951-21	DIODE PR1102W-TR			
D903	8-719-404-49	DIODE MA111			
		< IC >			
IC901	8-759-196-14	IC BA7149F-E2			
		< COIL >			
L901	1-412-031-11	INDUCTOR CHIP 47uH			
L902	1-410-387-11	INDUCTOR CHIP 33uH			
⚠L903	1-402-680-21	COIL, FERRITE (HCL)			
		< TRANSISTOR >			
Q901	8-729-120-28	TRANSISTOR 2SC1623-L5L6			
					(TRV11:US,Canadian/TRV21:US,Canadian)
Q902	8-729-106-68	TRANSISTOR 2SD1615A-GP			
Q903	8-729-216-31	TRANSISTOR 2SA1163-G			
Q904	8-729-120-28	TRANSISTOR 2SC1623-L5L6			

Ref. No.	Part No.	Description			Remarks
		< RESISTOR >			
R901	1-216-817-11	METAL CHIP	470	5%	1/16W
R902	1-216-817-11	METAL CHIP	470	5%	1/16W
R903	1-216-057-00	METAL CHIP	2.2K	5%	1/10W
R904	1-216-833-11	METAL CHIP	10K	5%	1/16W
					(TRV11:US,Canadian/TRV21:US,Canadian)
R905	1-216-822-11	METAL CHIP	1.2K	5%	1/16W
					(TRV11:US,Canadian/TRV21:US,Canadian)
R906	1-216-813-11	METAL CHIP	220	5%	1/16W
R907	1-216-845-11	METAL CHIP	100K	5%	1/16W
R908	1-216-852-11	METAL CHIP	390K	5%	1/16W
R909	1-216-833-11	METAL CHIP	10K	5%	1/16W
R910	1-216-835-11	METAL CHIP	15K	5%	1/16W
R911	1-216-160-00	METAL GLAZE	27	5%	1/8W
R912	1-216-857-11	METAL CHIP	1M	5%	1/16W
R913	1-216-820-11	METAL CHIP	820	5%	1/16W
R914	1-216-813-11	METAL CHIP	220	5%	1/16W
R915	1-216-793-11	METAL GLAZE	4.7	5%	1/16W
R916	1-218-879-11	METAL CHIP	22K	0.50%	1/16W
					(TRV11/TRV21)
R916	1-218-881-11	METAL CHIP	27K	0.50%	1/16W
					(TRV11E/TRV21E)
R917	1-218-891-11	METAL CHIP	68K	0.50%	1/16W
					(TRV11/TRV21)
R917	1-218-893-11	METAL CHIP	82K	0.50%	1/16W
					(TRV11E/TRV21E)
R918	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R919	1-216-839-11	METAL CHIP	33K	5%	1/16W
R920	1-216-837-11	METAL CHIP	22K	5%	1/16W
R921	1-216-795-11	METAL GLAZE	6.8	5%	1/16W
R922	1-216-847-11	METAL CHIP	150K	5%	1/16W
R923	1-216-857-11	METAL CHIP	1M	5%	1/16W
R924	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W
R925	1-216-862-11	METAL GLAZE	2.7M	5%	1/16W
R926	1-216-821-11	METAL CHIP	1K	5%	1/16W
R927	1-216-821-11	METAL CHIP	1K	5%	1/16W
R928	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R929	1-216-818-11	METAL CHIP	560	5%	1/16W
R930	1-216-815-11	METAL CHIP	330	5%	1/16W
R931	1-216-810-11	METAL CHIP	120	5%	1/16W
R933	1-216-811-11	METAL CHIP	150	5%	1/16W
		< VARIABLE RESISTOR >			
RV904	1-238-862-11	RES, ADJ, CERMET 1M			
		< TRANSFORMER >			
⚠T901	1-453-124-11	TRANSFORMER ASSY, FLYBACK			

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

< THERMISTOR >

Ref. No.	Part No.	Description	Remarks
TH901	1-809-350-21	THERMISTOR, NTC (2125)	

< FLAT CABLE >

Ref. No.	Part No.	Description	Remarks
W901	1-540-019-21	SOCKET ASSY, CRT	

MISCELLANEOUS

****

Ref. No.	Part No.	Description	Remarks
70	1-542-259-11	MICROPHONE, CAP	
104	1-775-520-11	CABLE, FLEXIBLE FLAT 45P	
117	1-801-191-11	INDICATOR MODULE, LIQUID CRYST	
⚠118	1-517-524-11	TUBE, FLUORESCENT, COLD CATHODE	
126	1-505-291-11	SPEAKER (DIA 2.8CM)	
⚠154	1-452-673-31	CRT ASSY (M01KXX90WB)	
203	1-775-518-11	CABLE, FLEXIBLE FLAT 12P	
209	1-547-739-21	LENS, ZOOM (VCL-5412WB)	
211	1-547-558-21	FILTER BLOCK, OPTICAL	(TRV11/TRV11E)
211	1-547-735-51	FILTER BLOCK, OPTICAL	(TRV21/TRV21E)
220	1-660-435-11	FP-402 FLEXIBLE BOARD	(TRV21/TRV21E)
D001	8-719-988-42	DIODE GL453S	
IC790	A-7030-368-A	CCD BLOCK ASSY (ICX-054AK-11)	(TRV11)
IC790	A-7030-369-A	CCD BLOCK ASSY (ICX-055AK-11)	(TRV11E)
IC790	A-7030-373-A	CCD BLOCK ASSY (ICX-059AK-41)	(TRV21)
IC790	A-7030-495-A	CCD BLOCK ASSY (ICX-060AK-41)	(TRV21E)
M901	A-7048-804-A	DRUM BLOCK ASSY(DGH-0C1A-R)	(TRV11/TRV21)
M901	A-7048-806-A	DRUM BLOCK ASSY(DGH-0C2A-R)	(TRV11E/TRV21E)
M902	8-835-531-02	MOTOR, DC SCE-0601A (CAPSTAN)	
M903	X-3945-401-1	MOTOR ASSY, DC (LOADING)	
S901	1-762-436-11	SWITCH, ROTARY (ENCODER)	

ACCESSORIES & PACKING MATERIALS

****

Ref. No.	Part No.	Description	Remarks
⚠	A-7003-839-A	AC-V15 AC POWER	(US/Canadian)
⚠	A-7003-840-A	AC-V15 AC POWER	(E/Australian/AEP)
⚠	A-7003-842-A	AC-V15 AC POWER	(UK)
⚠	A-7003-843-A	AC-V15 AC POWER	(Tourist)
⚠	A-7003-969-A	AC-V15 AC POWER	(Hong Kong)
	A-7092-697-A	CASE (N) ASSY (2), BATTERY	(TRV11:US,Canadian/TRV21:US,Canadian)
	1-473-342-11	REMOTE COMMANDER (RMT-713)	
	1-569-008-11	ADAPTER, CONVERSION 2P	(TRV11:E,Hong Kong/TRV11E:E,Hong Kong/ TRV21:E,Tourist/TRV21E:E,Tourist)
	1-574-039-21	CORD, CONNECTION (AV CABLE)(1.5m)	
	1-764-622-11	ADAPTOR, CONVERSION	(TRV11E:AEP,UK/TRV21E:AEP,UK)
	3-336-764-01	SHEET, PROTECTION	(TRV21PK ONLY)
*	3-704-291-01	BAG (STANDARD), PROTECTION	(TRV21PK ONLY)
	3-810-780-11	MANUAL, INSTRUCTION (ENGLISH/SPANISH)	(TRV11E:AEP,UK/TRV21E:AEP,UK)
	3-810-780-21	MANUAL, INSTRUCTION (ENGLISH)	(TRV11:US,Canadian/TRV21:US,Canadian)
	3-810-780-31	MANUAL, INSTRUCTION (FRENCH)	(TRV11:Canadian/TRV21:Canadian)
	3-810-780-41	MANUAL, INSTRUCTION (GERMAN/ITALIAN)	(TRV11E:AEP/TRV21E:AEP)
	3-810-780-51	MANUAL, INSTRUCTION (FRENCH/DUTCH)	(TRV11E:AEP/TRV21E:AEP)
	3-810-780-61	MANUAL, INSTRUCTION (SWEDISH/PORTUGUESE)	(TRV11E:AEP/TRV21E:AEP)
	3-810-780-71	MANUAL, INSTRUCTION (ENGLISH/RUSSIAN)	(TRV11E:AEP/TRV21E:AEP)
	3-856-152-11	MANUAL, INSTRUCTION (ENGLISH/RUSSIAN)	(TRV11E:E,Australian,Hong Kong/ TRV21E:E,Tourist)
	3-856-152-21	MANUAL, INSTRUCTION (FRENCH/GERMAN)	(TRV11E:E,Hong Kong/TRV21E:E,Tourist)
	3-856-152-31	MANUAL, INSTRUCTION (ARABIC/PORTUGUESE)	(TRV11E:E/TRV21E:E)
	3-856-152-41	MANUAL, INSTRUCTION (CHINESE)	(TRV11E:E,Hong Kong/TRV21E:E,Tourist)
	3-856-152-51	MANUAL, INSTRUCTION (ENGLISH/SPANISH)	(TRV11:E,Hong Kong/TRV21:E,Tourist)
	3-856-152-61	MANUAL, INSTRUCTION (CHINESE)	(TRV11:E,Hong Kong/TRV21:E)
	3-947-969-21	BELT (S), SHOULDER	
	3-967-166-01	CASE (330), SOFT	(TRV21PK ONLY)
*	3-968-092-01	PAT, PROTECTION	(TRV21PK ONLY)
*	3-968-618-01	CUSHION, ACC	(TRV11/TRV11E/TRV21:US,Canadian,E/ TRV21E:AEP,UK,E)
*	3-968-619-01	CUSHION (LOWER)	
*	3-968-620-01	INDIVIDUAL CARTON	(TRV11:US,Canadian)
*	3-968-620-11	CARTON, INDIVIDUAL	(TRV11:E,Hong Kong)
*	3-968-620-21	CARTON, INDIVIDUAL	(TRV21:US,Canadian)
*	3-968-620-31	CARTON, INDIVIDUAL	(TRV11E:AEP,UK)
*	3-968-620-41	CARTON, INDIVIDUAL	(TRV21E:AEP,UK)
*	3-968-620-51	CARTON, INDIVIDUAL	(TRV21E:E,Tourist)
*	3-970-001-02	INDIVIDUAL CARTON	(TRV11E:E,Australian,Hong Kong)
*	3-970-001-11	INDIVIDUAL CARTON	(TRV21:E,Tourist)
*	3-970-688-01	INDIVIDUAL CARTON	(TRV21)
	**NP-33	BATTERY PACK	

NOTE.

**MARK PARTS IS AVAILABLE AS AN OPTIONAL ACCESSORY.

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

SECTION 6
ADJUSTMENTS

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6-38.

6-1. CAMERA SECTION ADJUSTMENT
1-1. PREPARATIONS BEFORE ADJUSTMENT

1-1-1. List of service tools

Oscilloscope
Adjustment screw driver
Regulated power supply
Color monitor
Vectorscope
Digital voltmeter
Pattern generator

Ref.No.	Name	Parts Code	Usage
J-1	Filter for color temperature correction (C14)	J-6080-058-A	Auto white balance adjustment/check White balance adjustment/check
J-2	ND filter 1.0	J-6080-808-A	White balance check
	ND filter 0.3	J-6080-818-A	White balance check
J-3	Pattern box PTB-450	J-6082-200-A	
J-4	Color chart for pattern box	J-6020-250-A	
J-5	Siemens star	J-6080-875-A	For checking the flange back
J-6	Adjustment remote commander(RM-95 upgraded) Note	J-6082-053-B	
J-7	Multi CPC	J-6082-311-A	For video section adjustment (VC-167 board CN002)

Note : If the microprocessor IC in the adjusting remote commander is not the new microprocessor (UPD7503G-C56-12), the pages cannot be switched.
In this case, replace with the new microprocessor (8-759-148-35).

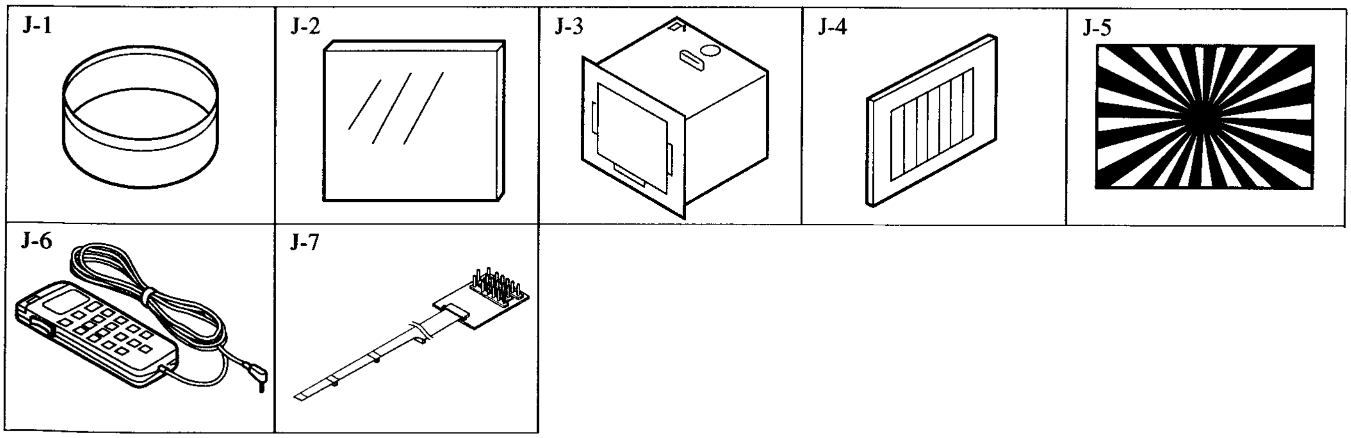


Fig.6-1-1.

1-1-2. Precautions

1. Switch settings

Adjust the switches to the following positions without loading the cassette tape unless otherwise specified.

1) Camera/video power switch
   Operation switch block .... Camera
2) PROGRAM AE switch (PD-67 board S301) .... AUTO
3) STEADY/WIDE switch (CF-42 board S486) .... OFF
   (CCD-TRV21//TRV21E)
4) D ZOOM switch (CF-42 board S300) .... OFF
   (CCD-TRV21//TRV21E)
5) REC MODE switch (CF-42 board S483) .... SP

2. Adjustment sequence

Adjust in the given order.

3. Subject

1) Set the camera and pattern box as shown in Fig. 6-1-2.
2) Color bar chart (Standard picture frame)

- Adjust the picture frame as shown in Fig. 6-1-3.
- Adjust camera zooming and direction until the camera output waveform on the oscilloscope shown in Fig. 6-1-3 (a) and the color picture on the monitor TV shown in Fig. 6-1-3 (b) have been acquired.
- Maintain this setup until adjustment is complete.

3) White pattern (Standard picture frame)
   Remove the color bar chart from the pattern box and adjust the camera setup until the white pattern picture frame is the same size and same position as the color bar chart (the standard picture frame).

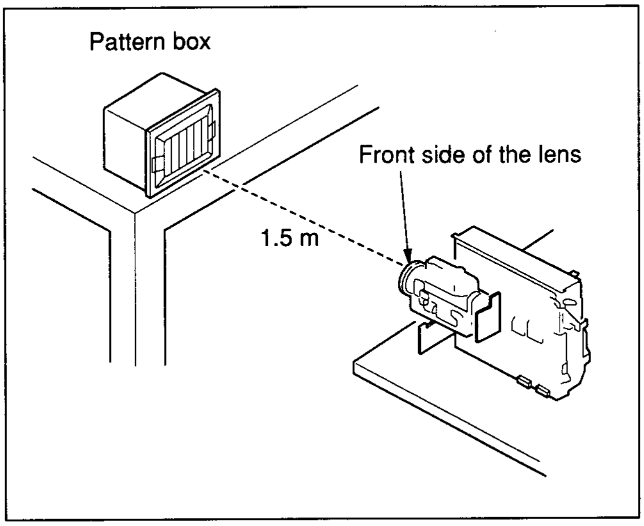
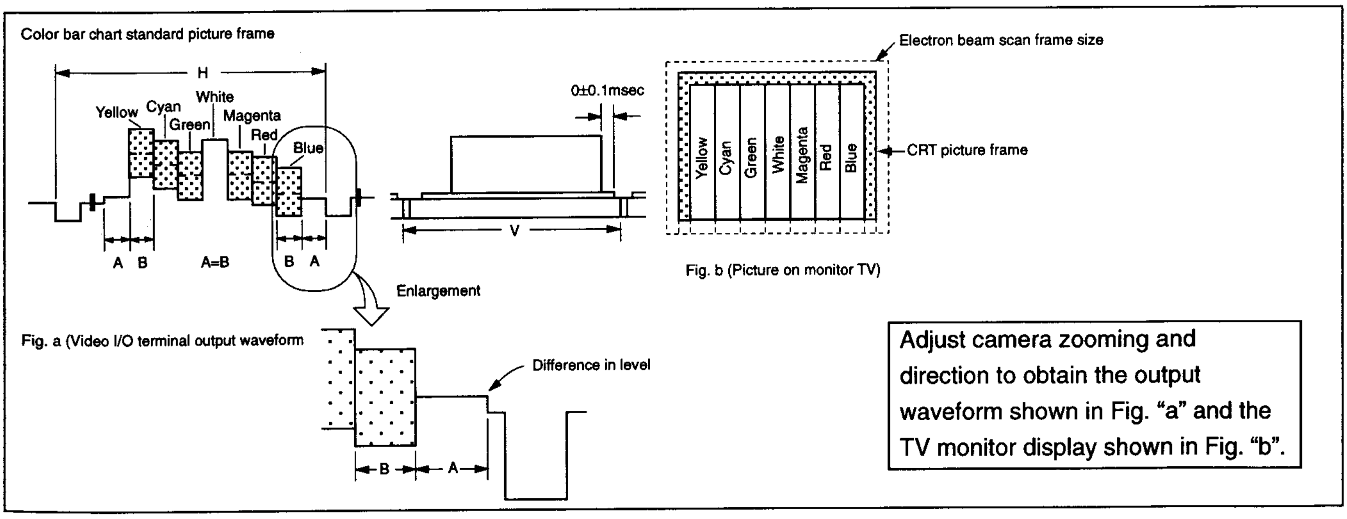

Pattern box
Front side of the lens
1.5 m

Fig. 6-1-2


Color bar chart standard picture frame
H
Yellow
Cyan
White
Green
Magenta
Red
Blue
A
B
A=B
B
A
0±0.1msec
V
Enlargement
Fig. a (Video I/O terminal output waveform
Difference in level
B
A
Electron beam scan frame size
Yellow
Cyan
Green
White
Magenta
Red
Blue
CRT picture frame
Fig. b (Picture on monitor TV)

Adjust camera zooming and direction to obtain the output waveform shown in Fig. "a" and the TV monitor display shown in Fig. "b".

Fig. 6-1-3

4) Chart for flange back adjustment
   Join together a piece of white A0 size paper (1189 mm × 841 mm) and a piece of black paper to make the chart shown in Fig. 6-1-4.

Note : Use a non-reflecting and non-glazing vellum paper. The size must be A0 or larger and the joint between the white and black paper must not have any undulations.

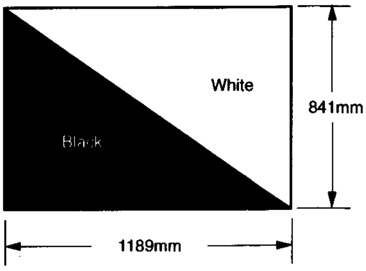

White
Black
841mm
1189mm

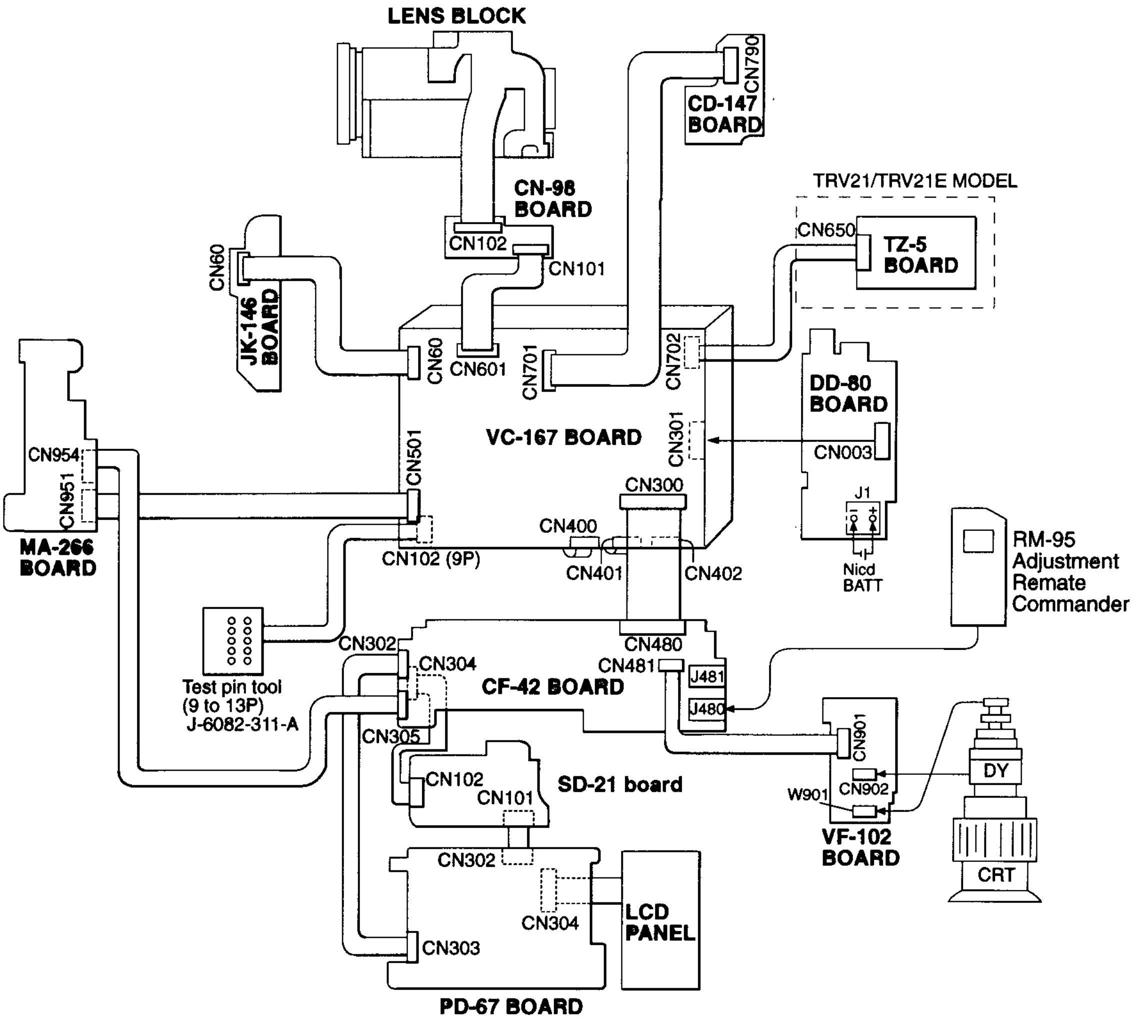
Fig. 6-1-4

1-1-3. Preparations

Note 1: Refer to “2. Disassembly” for details of how to remove the cabinet and the respective boards.

Note 2: Removal of the lens block and VC-167 board is not necessary if only adjustments are to be made.

1) Connect the adjustment equipment as shown in Fig. 6-1-5.



LENS BLOCK
CN790
CD-147 BOARD
CN-98 BOARD
CN102
CN101
TRV21/TRV21E MODEL
CN650
TZ-5 BOARD
CN60
JK-146 BOARD
CN60
CN601
CN701
CN702
DD-80 BOARD
CN003
J1
Nicd BATT
CN954
CN951
MA-266 BOARD
CN501
VC-167 BOARD
CN301
CN300
CN400
CN102 (9P)
CN401
CN402
RM-95 Adjustment Remate Commander
Test pin tool (9 to 13P) J-6082-311-A
CN302
CN304
CN480
CN481
J481
J480
CF-42 BOARD
CN305
CN901
W901
CN902
VF-102 BOARD
DY
CRT
CN102
CN101
SD-21 board
CN302
CN304
LCD PANEL
CN303
PD-67 BOARD

Fig. 6-1-5.

1-1-4. Adjustment remote commander (RM-95 upgraded)

To perform adjustment, the adjustment data stored in the non-volatile memory must be rewritten using the adjustment remote commander (RM-95 upgraded).

The adjustment remote commander uses the remote commander signal line (LANC) to interactively communicate with the merchandise. The page, address and up/down command data are sent from the adjustment remote commander to the merchandise. In return, the page, address and data are sent to the adjustment remote commander from the merchandise.

1. Using the adjustment remote commander

1) Connect the adjustment remote commander to the LANC terminal (CF-42 board J480).
2) Set the NOR-ADJ (or HOLD) switch of the adjustment remote commander to the "ADJ" (or ON) (service) position.
   If the adjustment remote commander is correctly connected, the adjustment remote commander's LED will show the display as shown in Fig. 6-1-6.
3) Bit value discrimination
   It is necessary to discriminate between the bit values with the data displayed on the adjustment remote commander for all following items. Identify whether the bit value is '1' or '0' with the use of the following diagram.

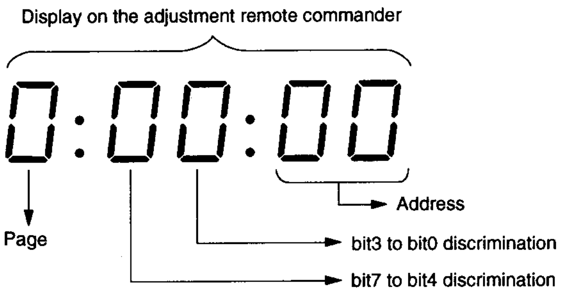

Display on the adjustment remote commander
0:00:00
Page
Address
bit3 to bit0 discrimination
bit7 to bit4 discrimination

Fig 6-1-6

	Display on the adjustment remote commander	Bit values			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(C)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ	E(E)	1	1	1	0
	F(F)	1	1	1	1

(example) If "8E" is displayed on the adjustment remote commander, the bit values for bit7 to bit4 are shown in the 'Ⓐ' column, and the bit values for bit3 to bit0 are shown in the 'Ⓑ' column.

4) The adjustment remote controller is operated as follows:

- Changing the page

  The pages increase when the EDIT SEARCH (+) button is pressed and decrease when the EDIT SEARCH (-) button is pressed. Altogether there are 16 pages from page "0" to page "F".

Hexadecimal notation	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
LCD display	0	1	2	3	4	5	6	7	8	9	A	b	C	d	E	F
Decimal notation after conversion	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15

- Changing the address

  The address increases when the FF (▶▶) button is pressed, and decreases when the REW (◀◀) button is pressed. Altogether there are 256 addresses from address "00" to address "FF". Some addresses, which are not used during adjustment, do not appear.
- Taking note the already-stored adjustment data

  The previous adjustment can be erased if the adjustment remote commander is incorrectly handled. To prevent this, it is recommended that all the stored adjustment data be noted down on the attached page F address list.
- Changing the data (Data setting)

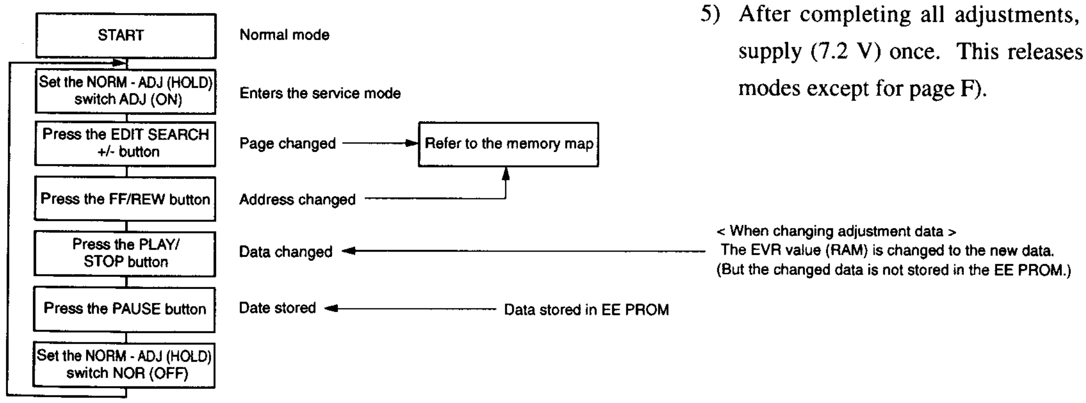
  The data increases when the PLAY (▶) button is pressed, and decreases when the STOP (■) button is pressed. Altogether there 256 data from data "00" to data "FF".
- Storing the data

  Press the PAUSE button to store the adjustment data (page F) into the non-volatile memory.

  (If the PAUSE button is not pressed after completing the adjustment, the new adjustment data will not be stored in the non-volatile memory.)

5) After completing all adjustments, turn off the main power supply (7.2 V) once. This releases the adjustment mode (all modes except for page F).

[Sequence of Service Modes Using the Adjustment Remote Commander]


START
Normal mode
Set the NORM - ADJ (HOLD) switch ADJ (ON)
Enters the service mode
Press the EDIT SEARCH +/- button
Page changed
Refer to the memory map
Press the FF/REW button
Address changed
Press the PLAY/ STOP button
Data changed
< When changing adjustment data >
The EVR value (RAM) is changed to the new data.
(But the changed data is not stored in the EE PROM.)
Press the PAUSE button
Date stored
Data stored in EE PROM
Set the NORM - ADJ (HOLD) switch NOR (OFF)

Command Name	Command Function	Normal LANC Command
Page Up	Page + 1	Edit Search +
Page Down	Page - 1	Edit Search -
Direct Page Set	Sets the specified page	Event Clear
Address Up	Address + 1	Fast Forward
Address Down	Address - 1	Rewind
Data Up	Data + 1	Play Back
Data Down	Data - 1	Stop
Store	Stores data in the EE PROM.	Pause

2. Precautions when using the adjustment remote commander

Mishandling of the adjustment remote commander may erase the correct adjustment data which has already been stored in the memory. To prevent this, it is recommended that all adjustment data is noted down on the attached page F address list before starting adjustments in addition to all new adjustment data after the completion of each adjustment step.

Page F Address List

Note 1: Data already stored in the adjustment data memo column are fixed values.

Note 2: The initial adjustment data values are the values which exist immediately after the execution of “F Page Data Initialization” and “F Page Data Modification”. These differ from the values which exist after all adjustment have been performed.

Note 3: There are cases where data has been entered into F page addresses between 8C and EF, but these are not related to the adjustments.

( ) : CCD-TRV11E/TRV21E

Address	Adjustment Data	
	Initial Value	Memo Column
00	00	00
01	00	00
02	00	00
03	02 (04)	04
04	10	10
05	E0	E0
06	10	10
07	00	00
08	04	04
09	00	00
0A	FF	
0B	08	
0C	00	
0D	00	
0E	00	
0F	00	
10	00	
11	00	
12	80	
13	40	
14	40	
15	80	
16	80	
17	B9 (9E)	
18	80	
19	53 (68)	
1A	7D (7E)	
1B	85	
1C	80	
1D	64	
1E	80	
1F	9E (AD)	
20	8E (9E)	
21	85 (87)	
22	C6	
23	C1	
24	58	
25	60	
26	80	
27	80	
28	48	
29	40	
2A	80	
2B	80	
2C	40	
2D	00	
2E	2D	
2F	D3	
30	2D	
31	FC (FD)	
32	F5 (F3)	
33	00	
34	3C	
35	00	
36	3E	
37	E0	
38	8F	
39	6C	
3A	36	
3B	3C	
3C	A3	
3D	0D	
3E	8E	
3F	12	
40	47	
41	10	
42	80	
43	80	
44	94 (64)	94 (64)
45	66 (46)	66 (46)
46	00	00
47	55	55
48	80	80
49	77 (7B)	77 (7B)
4A	80	80
4B	77 (78)	77 (78)
4C	80	80
4D	76 (92)	76 (92)

Address	Adjustment Data	
	Initial Value	Memo Column
4E	80	80
4F	76 (91)	76 (91)
50	80	80
51	80	80
52	80	80
53	A8	A8
54	CC	CC
55	3C	3C
56	1B	1B
57	80	80
58	80	80
59	80	80
5A	79	79
5B	4C	4C
5C	17 (1A)	17 (1A)
5D	32 (36)	32 (36)
5E	23	23
5F	45	45
60	16	16
61	A2	A2
62	A3	A3
63	BA	BA
64	2E (2C)	2E (2C)
65	09	09
66	66	66
67	05 (07)	05 (07)
68	66	66
69	9F	9F
6A	66	66
6B	66	66
6C	59	59
6D	83	83
6E	67	67
6F	5D	5D
70	5C	5C
71	4A	4A
72	1E	1E
73	5C	5C
74	3A	3A
75	33	33
76	00 (02)	00 (02)
77	1B	1B
78	E8	E8
79	30 (28)	30 (28)
7A	10 (0D)	10 (0D)
7B	6A	6A
7C	58	58
7D	44	44

Address	Adjustment Data	
	Initial Value	Memo Column
7E	33	33
7F	05	05
80	07	07
81	03	03
82	40	40
83	56	56
84	5D	5D
85	60	60
86	04	04
87	0F	0F
88	10	10
89	0A	0A
8A	38	38
8B	B0	B0
8C~E3		
E4~EF		
F0~FF		

1-2. CAMERA SYSTEM ADJUSTMENTS

1. Adjustment points when major parts have been replaced

When the CCD imager or lens block is replaced, adjust the items indicated by ○ in the following table.

	When the CCD imager is replaced	When the lens block is replaced
HALL adjustment		○
CCD imager compensation data writing	○	
Flange back adjustment	○	○
IRIS IN/OUT adjustment	○	○
MAX GAIN adjustment	○	
Color reproduction adjustment	○	
Auto white balance reference data input	○	
Auto white balance adjustment	○	

2. Power supply voltage check (VC-167 board)

Subject	Any subject
Measuring equipment	Digital voltmeter
DIG5V check	
Measurement Point	CN300 ㊶ Pin (CN300 ㊳, ㊴ Pin: MT GND)
Specification Value	4.86±0.15Vdc
DIG3.5V check	
Measurement Point	CN300 ㉚ Pin (CN300 ㉛, ㉜ Pin: VTR GND)
Specification Value	3.16±0.1Vdc
CAM15V check	
Measurement Point	CN701 ⑯ Pin (CN701 ① Pin: GND)
Specification Value	14.95±0.4Vdc
CAM-8.5V check	
Measurement Point	CN701 ⑭ Pin (CN701 ① Pin: GND)
Specification Value	-8.5±0.5Vdc

Check procedure

1) Check that all power supply voltages satisfy the specified value.
If not, refer to "Video circuit, Power supply block adjustment".

3. Preparation for adjustment

Objective: Make sure that the camera can be operated from the LANC line even if the mode control microprocessor's A/D port is left open.

Mode	Any Mode
Measuring Equipment	Remote controller RM-95 upgraded for LANC
Adjustment Page	Page 6, page F
Adjustment Address	00, 02

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Turn the main power switch ON.
2	6	00	01	After setting the data, press the PAUSE button.
3	F	02	21	After setting the data, press the PAUSE button.
4				Turn off the UNREG power supply once, then turn it on.
5	6	00	00	After setting the data, press the PAUSE button.

Note 1: If data 01 is set to page 6, address 00, the adjustment for page F, address 01 to 8B can also be performed.

Note 2: When all adjustments of the camera system is completed, set data 00 to the page F, address 02.

4. Initialization of page F data

Note 1: Execute the initialization of page F only when the non-volatile memory (VC-167 board IC401 EE PROM) is replaced.

Note 2: If the page F data has been initialized, all adjustment items of the camera section must be executed again.

Initializing procedure:

Order	Page	Address	Data	Procedure
1				Turn OFF and ON the main power supply. (Preparation)
2	6	00	01	After setting the data 01 to the address, press the PAUSE button.
	6	11		Confirm that the data is 00.
3	6	01	2D	After setting the data, Press the PAUSE button. (Execution of page F data initialization. By this operation, all the data from address 01 to EF are initialized.)
4	6	11		Confirm that the data is 01.

Works required after initialization

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, Press the PAUSE button.
2	6	00	00	After setting the data, Press the PAUSE button. (End)
				Perform the next item "5. Page F Data Modifications", then execute all adjustment items of the camera section.

Related Adjustments:

All items of camera adjustment excluding "28 MHz Crystal Oscillator Adjustment".

5. V SUB adjustment

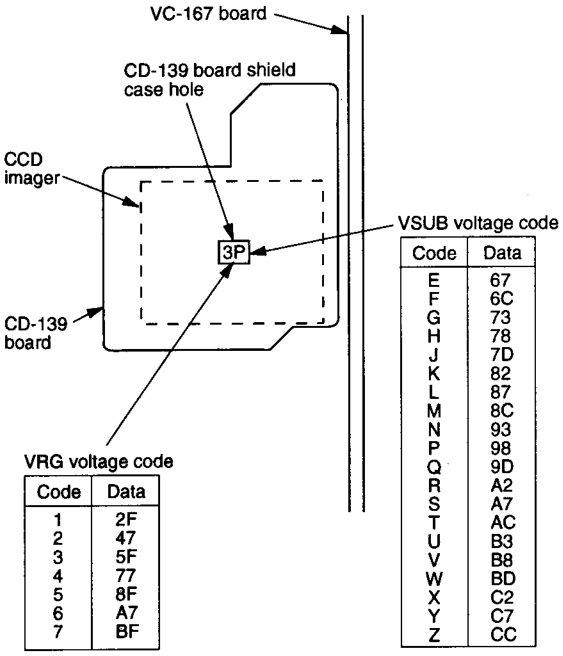
Subject	Not required
Adjustment Page	F
Adjustment Address	26

Related Adjustments:

"MAX gain adjustment", "Auto white balance reference data input", "Auto white balance adjustment", "Color reproductivity adjustment".

Adjustment method:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	26		Reading a voltage code of V SUB indicated by CCD imager then input data of a table (Fig.6-1-7)
3	F	26		Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)



VRG voltage code

Code	Data
1	2F
2	47
3	5F
4	77
5	8F
6	A7
7	BF

VSUB voltage code

Code	Data
E	67
F	6C
G	73
H	78
J	7D
K	82
L	87
M	8C
N	93
P	98
Q	9D
R	A2
S	A7
T	AC
U	B3
V	B8
W	BD
X	C2
Y	C7
Z	CC

Fig 6-1-7

6. VRG adjustment

Subject	Not required
Adjustment Page	F
Adjustment Address	27

Adjustment method:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	27		Reading a voltage code of V SUB indicated by CCD imager then input data of a table (Fig.6-1-7)
3	F	27		Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

7. Page F data modification

All the data of page F are automatically initialized if the initialization is executed. However, among the initialized data, the following addresses require manual modification of data after the page F data is initialized.

*CND : Canadian model

Modification procedure:

Order	Page	Address	Data								Procedure
			TRV11		TR11E		TRV21/21PK		TRV21E		
			US,CND	others	AEP,UK	others	×24	×48	×24	×48	
1	6	00	01								After setting the data, Press the PAUSE button. (Preparation)
2	F	03	22	23	24	25	22	23	24	25	Set each data to each address, and press the PAUSE button.
		04	18		18		68		68		
		05	E1		E1		E1		E1		
		06	18		18		18		18		
		07	—		—		07		07		
		08	—		14		24		24		
		17	B9		—		B9		—		
		19	53		—		53		—		
		1A	7D		—		7D		—		
		1E	8D		—		8D		—		
		1F	9E		—		9E		—		
		20	8E		—		8E		—		
		21	85		—		85		—		
		31	FB		—		FC		FC		
		32	F4		—		F4		F4		
		44	96		66		96		66		
		45	68		48		68		48		
		47	95		—		95		—		
		49	77		—		77		—		
		4B	77		—		77		—		
		4D	76		—		76		—		
		4F	76		—		76		—		
		53	A8		AD		A8		AD		
		54	AF		AF		AF		AF		
		5A	7A		—		7A		—		
		5C	1B		—		17		—		
		5D	34		—		32		32		
		5E	24		24		—		24		
		60	—		—		15		16		
		61	A6		A4		BA		A8		
		62	—		—		C3		—		
		63	B5		85		B2		83		
		64	40		42		1E		2A		
		65	—		—		00		00		
		67	05		—		01		03		
		68	—		—		6B		6B		
		6B	—		—		6C		6C		
		6C	—		—		5C		5C		
		72	—		—		20		20		
		74	—		—		3C		3C		
		76	00		—		00		—		
		78	E8		—		E0		D8		
		79	30		—		30		—		
		7A	10		—		10		—		
		7D	26		—		26		—		
		87	—		—		1F		1F		
		88	—		—		20		20		
		89	—		—		02	32	02	32	
		8B	—		D0		—		—		
		E4-EF	00		00		00		00		
		F5	A8		A8		A8		A8		
		F6	5E		5E		5E		5E		
		F7	CC		C4		A8		94		

8. 28 MHz crystal oscillator adjustment

Purpose: Adjusts 28 MHz crystal controlled oscillation for synchronizing clock.

Adjustment error: Loss of synchronization or loss of color.

Subject	Note required
Measurement Point	IC201 (54) pin
Measuring Instrument	Frequency counter
Adjustment Page	F
Adjustment Address	25
Specification	3579545±17Hz (4433618.75±17Hz)

( ) : CCD-TRV11E/TRV21E

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	25		Change the data using PLAY, STOP buttons until the frequency satisfies the specification.
3	6	00	00	After setting the data, press the PAUSE button. (End)

Reference: **Conversion between the hexadecimal number and decimal number.**

In some adjustment items, data appears in hexadecimal numbers on the DDS display or on the adjustment remote commander. Maintenance engineers are expected to convert the displayed hexadecimal numbers to the corresponding decimal numbers using the following conversion table. Make a required calculation described in each adjustment item. Then re-convert the result of calculation back from the decimal numbers to the corresponding hexadecimal numbers using the following conversion table.

Hexadecimal-Decimal Conversion Table

Lower digit of hexa-decimal / Upper digit of hexadecimal	0	1	2	3	4	5	6	7	8	9	A (A)	B (b)	C (C)	D (d)	E (E)	F (F)
0	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
2	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47
3	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63
4	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79
5	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95
6	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111
7	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127
8	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143
9	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159
A(A)	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175
①→ B(b)	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191
C(C)	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207
D(d)	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223
E(E)	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239
F(F)	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255

Note : The characters shown in the parenthesis ( ) shows the display on the adjustment remote commander.
(Example) If the DDS display or the adjustment remote commander shows BD (bd);
Because the upper digit of the hexadecimal number is B (b), and the lower digit is D (d), the meeting point "189" of (1) and (2) in the above table is the corresponding decimal number.

< How to convert the decimal number to hexadecimal number >

The decimal numbers are divided into following three categories. Calculation method is different in three categories respectively.

(1)0~255 → 00h~FFh
(2)256~4095 → 0100h~0FFFh
(3)4096~65536 → 1000h~FFFFh

If the decimal number fall into the category (1);

1) Divide the decimal number by 16. Result is "A".
2) Take the integer portion of the number "A" as "B".
3) Calculate the equation (A-B)×16. Result is "C".
4) "B" is the second digit number of the hexadecimal number and "C" is the first digit number of the hexadecimal number. (BC)h

(Example)

If the decimal number is "189";

1) 189÷16=$\underline{11}$.8125 ....(A)
↑
2) (B)
3) (11.8125−11)×16=13 ....(C)
4) 189 → (BD)h is obtained.

If the decimal number fall into the category (2);

1) Divide the decimal number by 256. Result is "A".
2) Take the integer portion of the number "A" as "B".
3) Calculate the equation (A-B)×256. Result is "C".
4) Take the integer portion of the number "C" as "D".
5) Calculate the equation (C-D)×16. Result is "E".
6) "B" is the third digit number, "D" is the second digit number and "E" is the first digit number of the hexadecimal number. (BDE)h

(Example)

If the decimal number is "2100";

1) 2100÷256=$\underline{8}$.203125 (A)
↑
2) (B)
3) (8.203125−8)×256÷16=$\underline{3}$.25 ....(C)
↑
4) (D)
5) (3.25−3)×16=4 ....(E)
6) 2100 → (834)h is obtained.

If the decimal number fall into the category (3);

1) Divide the decimal number by 4096. Result is "A".
2) Take the integer portion of the number "A" as "B".
3) Calculate the equation (A−B) × 4096 ÷ 256. Result is "C".
4) Take the integer portion of the number "C" as "D".
5) Calculate the equation (C−D) × 256 ÷ 16. Result is "E".
6) Take the integer portion of the number "E" as "F".
7) Calculate the equation (E-F)×16. Result is "G". (Round the number "G" to count fractions of 0.5 and over as a unit and cut away the rest.)
8) "B" is the fourth digit number, "D" third digit number, "F" is the second digit number and "G" is the first digit number of the hexadecimal number. (BDFG)h

(Example)

If the decimal number is "31814";

1) 31814÷4096=$\underline{7}$.7670898 ....(A)
↑
2) (B)
3) (7.7670898−7)×4096÷256=$\underline{12}$.273436 ....(C)
↑
4) (D)
5) (12.273436−12)×256÷16=$\underline{4}$.374976 ....(E)
↑
6) (F)
7) (4.374976−4)×16=5.999616
(Round the number to count fractions of 0.5 and over as a unit and cut away the rest.)
↓
8) 6 ....(G)
9) 31814 → (7C46)h is obtained.

< How to convert the hexadecimal number to decimal number >

If the hexadecimal number is (ABCD)h, the decimal number is calculated by the following equation.

(A×4096)+(B×256)+(C×16)+(D×1)=decimal number

(Example) If the hexadecimal number is "(3BA4)h":

(3×4096)+(11×256)+(10×16)+(4×1)=15268

9. HALL adjustment

Purpose: Variation of the HALL element outputs is removed by adjusting amplifier gain and offset. The HALL elements detect the lens iris position.

Adjustment error: Oscillation of lens iris, or incorrect white balance indoor and outdoor.

Subject	Not required
Measurement Point	DDS display on the EVF or monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	2A 2B
Specification	13 to 17h when iris is opened. 77 to 7Bh when iris is closed.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	02	21	After setting the data, press the PAUSE button.
3				Turn off the UNREG power supply once, then turn it on.
4	6	00	01	After setting the data, press the PAUSE button.
5	6	02	03	After setting the data, press the PAUSE button.
6	6	01	03	After setting the data, press the PAUSE button.
7	F	2A	40	After setting the data, press the PAUSE button. Read the data appearing on the DDS display note. The read-out data is W_2.
8	F	2A	30	After setting the data, press the PAUSE button. Read the data appearing on the DDS display note. The read-out data is W_1.
9	6	01	01	After setting the data, press the PAUSE button.
10	F	2A	30	After setting the data, press the PAUSE button. Read the data appearing on the DDS display note. The read-out data is K_1.
11	F	2A	40	After setting the data, press the PAUSE button. Read the data appearing on the DDS display note. The read-out data is K_2.
12				Convert the data W_1, W_2, K_1 and K_2 into the decimal numbers. The result decimal numbers are W_1', W_2', K_1' and K_2'. (Use the < How to convert the hexadecimal number to decimal number > or "Hexadecimal-Decimal Conversion Table".Calculate the following equation (decimal number calculation) to obtain X_1'.
13				$A' = W_2' + K_1' - W_1' - K_2'$ ....equation 1 $B' = W_1' - K_1'$ ....equation 2 $X_1' = \frac{1600 + (48 \times A') - (16 \times B')}{A'}$ ....equation 3
14				Convert the decimal number X_1' to the hexadecimal number to obtain X_1. (Round the number X_1 to count fractions of 0.5 and over as a unit and cut away the rest.)
15	F	2A		Set the data X_1 (obtained at step 14).
16				Press the PAUSE button.
17	F	2B		Change the data using the PLAY and STOP until 15 appears on the DDS display.
18				Press the PAUSE button.
19	6	01	03	After setting the data, press the PAUSE button.
20				If the DDS display shows the data in the range from 77 to 7B, it indicates the end of adjustment, and proceed to the item "Processing after Adjustments". If it is not, use the DDS display data as W0 and proceed to step 21 and followings.

Note : Lower two digits of the data which is displayed at the right bottom of he EVF or TV monitor

Order	Page	Address	Data	Procedure
21				Convert the value W0 to a decimal value to obtain the value W0'.
22				Calculate the value X_2' from the following equation (decimal calculation). $C' = W_0' + K_1' - W_1' - 20$ ....equation 4 $X_2' = \frac{(100 - B') \times (X_1' - 48) + (48 \times C')}{C'}$ ....equation 5 (The values X1' and B' are obtained from the equations 2 and 3 in step 13.)
23				Convert the value X2' to a hexadecimal number to obtain X2. (Round the number X2 to count fractions of 0.5 and over as a unit and cut away the rest.)
24	F	2A		Set the data X2 (which is the result of calculation in step 23).
25	F	2A		Press the PAUSE button.
26	F	2B		Change data using PLAY and STOP button until 79 appears on the DDS display.
27	F	2B		Press the PAUSE button.
28	6	01	01	After setting the data, press the PAUSE button.
29				Confirm that the DDS display shows the data in the range from 13 to 17.

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	02	00	After setting the data, press the PAUSE button.
2	6	01	00	After setting the data, press the PAUSE button.
3	F	02	00	After setting the data, press the PAUSE button.
4				Turn off the UNREG power supply once, then turn it on.
5	6	00	00	After setting the data, press the PAUSE button. (End)

Related adjustments:

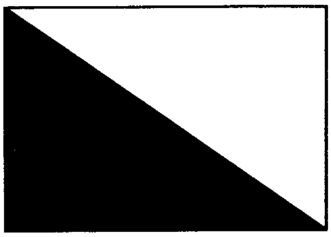
"IRIS IN/OUT adjustment"

10. Flange back adjustment

Purpose: Automatic flange back adjustment of inner focus lens.

Adjustment error: Loss of focus when switched between auto focus and manual focus.

Subject	Chart for flange back adjustment (Placed 2000 ±5 mm in front of the lens with illumination of 300 ±50 lux.)
Measurement Point	Confirm the focus on monitor TV.
Measuring Instrument	Confirm focus on monitor TV
Adjustment Page	F
Adjustment Address	3C 3D 3E 3F 40 41



(Chart for flange back adjustment)
(See Page 6-2)

Note : Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off. (CCD-TRV21/TRV21E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Check that the center of the flange back adjustment chart coincides with that of the display on the monitor at both ends: TELE end and the WIDE end of the zoom lens.
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3				Confirm that the data at page F, address 1B is the initial value, referring to the "Page F address list".
4	6	11		Confirm that the data is 00.
5	6	42	02	After setting the data, press the PAUSE button.
6	6	43	01	After setting the data, press the PAUSE button.
7	6	01	13	After setting the data, press the PAUSE button.
8	6	01	15	After setting the data, press the PAUSE button. The adjustment data is automatically input to page: F, addresses: 3C to 41.
9	6	11		Confirm that the data is 01.

Processing after Adjustments:

Order	Procedure
1	Turn the main power supply (7.2 V) OFF, then ON. (If this step is not performed, the camera will be out of focus.)

11. Flange back check

Subject	Siemens star (Placed 2000 ±5 mm in front of the lens with illumination of about 200 lux.)
Measurement Point Measuring Instrument	Confirm focus on monitor TV
Specification Value	Picture must have good focus at both TELE and WIDE ends.

Note 1: Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Note 2: It is judged from the page A display on the adjustment remote commander if the picture has good focus while the auto focus is ON.

1) Set data: 0B to the page:6, address: 02.
2) Focus condition can be known from the page A display.

A: 00 : XX
See the right table.
(Bit 2 value 0 : Picture is out of focus.
1 : Picture is in focus.)

In focus

Display on the adjustment remote commander	Bit values bit2
0	0
1	0
2	0
3	0
4	1
5	1
6	1
7	1
8	0
9	0
A(A)	0
B(b)	0
C(C)	1
D(d)	1
E(E)	1
F(F)	1

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Place a Siemens star at 2 meters in front of lens.
2				Decrease illumination to the chart down to a point before noise appears on monitor TV, in order to fully open the IRIS.
3	6	43	01	After setting the data, press the PAUSE button. (CCD-TRV21/TRV21E)
4				Shoot the Siemens star at TELE end.
5				Confirm that the image is in focus. (Note 2).
6	6	21	10	After setting the data, press the PAUSE button.
7				Shoot the Siemens star at WIDE end.
8				Confirm that the image is in focus.

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	02	00	After setting the data, press the PAUSE button.
2	6	21	00	After setting the data, press the PAUSE button. (END) (CCD-TRV11/TRV11E)
3	6	43	00	After setting the data, press the PAUSE button. (END) (CCD-TRV21/TRV21E)

12. Picture frame setting

Subject	Color bar chart standard picture frame
Measurement Point	VIDEO output terminal (Terminated in 75 Ω)
Measuring Instrument	Oscilloscope and monitor TV
Specification Value	A=B, C=D, t=0±0.1msec

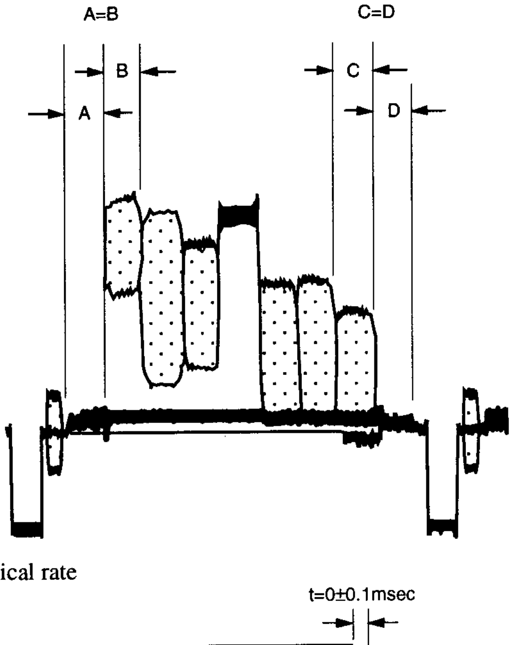
Note : Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off. (CCD-TRV21/TRV21E)

Setting procedure:

Order	Procedure
1	Turn OFF the auto focus.
2	Adjust the focus using the focus knob.
3	Adjust direction and zoom of camera so that the picture frame is adjusted as specified by Fig. 6-1-8 and Fig. 6-1-9.
4	Write down markings on the picture frame on the monitor screen. If the "color bar chart standard picture frame" or "white pattern standard picture frame" is specified in the following adjustment items, obtain this picture frame.

Confirm with an oscilloscope

1. Horizontal rate



2. Vertical rate

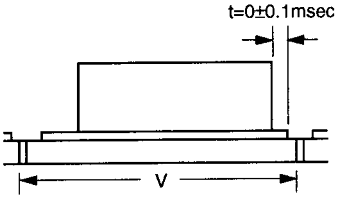


Fig. 6-1-8

Confirm on TV monitor (underscanned display)

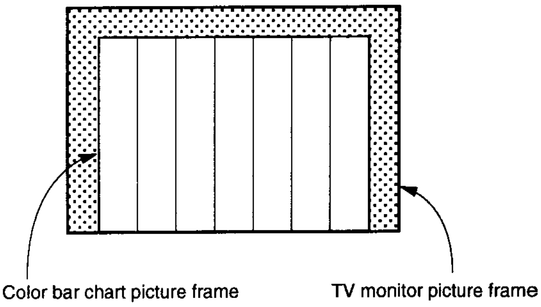


Fig. 6-1-9

13. Color reproduction adjustment

Purpose: Adjust the three primary color matrix coefficients for correct color reproduction.

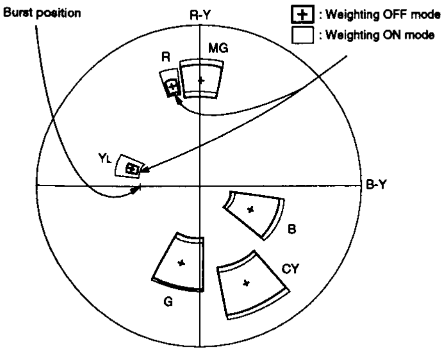
Adjustment error: Poor color reproduction.

Subject	Color bar chart standard picture frame
Measurement Point	VIDEO output terminal (Terminated in 75 Ω)
Measuring Instrument	Vectorscope
Adjustment Page	F
Adjustment Address	2D, 2E, 2F, 30
Specification Value	Each spot must be located within the specified color reproduction zone on a vectorscope display.

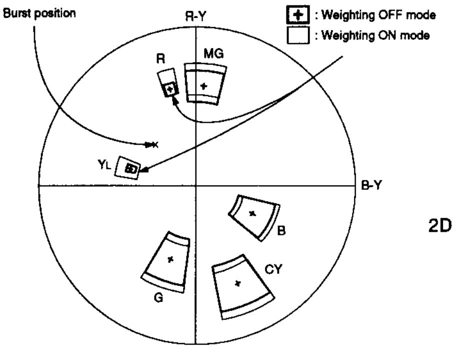
Note : Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Adjustment procedure:

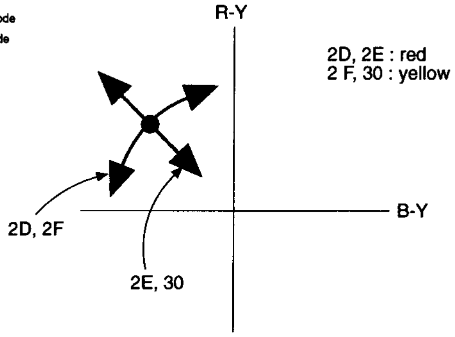
Order	Page	Address	Data	Procedure	Condition
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)	
2	6	03	00	After setting the data, press the PAUSE button. (Setting)	
3	6	01	37	After setting the data, press the PAUSE button.	
4	F	2D, 2E 2F, 30		Change the data so that each spot must be located within the specified color reproduction zone on a vectorscope display. Press the PAUSE button for each address.	Weighting OFF mode.


Burst position
R-Y
⊞ : Weighting OFF mode
☐ : Weighting ON mode
R
MG
YL
B-Y
B
CY
G

NTSC


Burst position
R-Y
⊞ : Weighting OFF mode
☐ : Weighting ON mode
R
MG
YL
B-Y
B
CY
G

PAL


R-Y
2D, 2E : red
2 F, 30 : yellow
B-Y
2D, 2F
2E, 30

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, press the PAUSE button.
2	6	03	10	After setting the data, press the PAUSE button. (Setting)
3	6	42	00	After setting the data, press the PAUSE button. (CCD-TRV11E/TRV21E)
4	6	00	00	After setting the data, press the PAUSE button. (End)

Related Adjustments:

"Auto white balance reference data input"

"Auto white balance adjustment"

14. IRIS IN/OUT adjustment

Purpose: Measure the light level and write into EE PROM for indoor/outdoor identification in auto white balance.

Adjustment error: Incorrect white balance.

Subject	White pattern standard picture frame
Measurement Point	EVF or DDS display of monitor TV
Measuring Instrument	
Adjustment Page	F
Adjustment Address	3A 3B

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	02	21	After setting the data, press the PAUSE button.
3				Turn off the UNREG power supply once, then turn it on.
4	6	00	01	After setting the data, press the PAUSE button.
5	6	11		Confirm that the date is 00,,
6	6	01	4B	After setting the data, press the PAUSE button.
7	6	01	49	After setting the data, press the PAUSE button.
8	6	11		If data is 01, this is the end of data read.

Note : Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, press the PAUSE button.
2	F	02	00	After setting the data, press the PAUSE button.
3				Turn off the UNREG power supply once, then turn it on.
4	6	00	00	After setting the data, press the PAUSE button. (End)

The page: A data appears on DDS of monitor TV.

15. MAX gain adjustment

Purpose:	Sets the minimum illumination level.
Adjustment error:	Normal video level cannot be obtained at low illumination (dark).

Subject	White pattern standard picture frame
Measurement Point	VIDEO output terminal (Terminated in 75 Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	2C
Specification Value	A =600 ± 10 mV

Note : Confirm that the "Camera-shaking connection" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	01	19	After setting the data, press the PAUSE button.
3	F	2C		Change data using PLAY and STOP buttons so that the Y signal level (A) satisfies the specification. The data which satisfies the Y signal level (A) is called "D2c".
4	F	2C		Set the data "D2c" and press the PAUSE button.

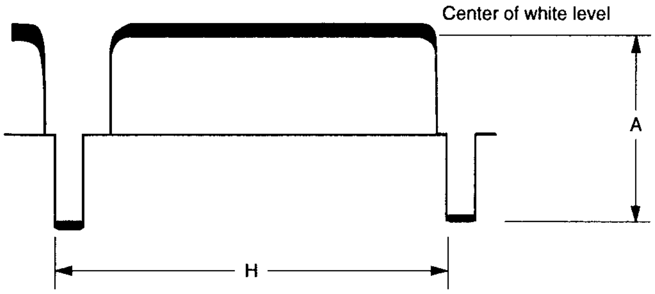


Fig. 6-1-10.

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, press the PAUSE button.
2	6	00	00	After setting the data, press the PAUSE button. (End)

16. Auto white balance reference data input

Subject	White pattern standard picture frame
Adjustment Page	F
Adjustment Address	33, 34, 35, 36

Note 1: Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Note 2: The "Color reproduction adjustment" must have been completed before making this adjustment.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Turn the main power OFF then to ON.
2				Shoot a white pattern with the standard picture frame.
3	6	00	01	After setting the data, press the PAUSE button.
4	6	11		Confirm that data is 00.
5	6	01	11	After setting the data, press the PAUSE button.
6	6	01	0D	After setting the data, press the PAUSE button. (Executes the auto white balance reference data input.)
7	6	11		If data is 01, this is the end of data read.

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, press the PAUSE button.
2				Execute "Auto white balance adjustment".
3	6	00	00	After setting the data, press the PAUSE button. (End)

Related Adjustments:

Auto white balance adjustment

17. Auto white balance adjustment

Purpose: Adjust for correct auto white balance.

Adjustment error: Poor color reproduction.

Subject	White pattern standard picture frame
Filter	Color temperature correction filter C14
Measurement Point Measuring Instrument	EVF or DDS display on monitor TV
Adjustment Page	F
Adjustment Address	38 39
Specification Value	R ratio 2A80±40h B ratio 5E80±80h

Note 1: Make this adjustment after "Auto white balance reference data input" is completed.

Note 2: Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation 1)
2	F	02	21	After setting the data, press the PAUSE button. (Preparation 2)
3				Turn off the UNREG power supply once, then turn it on.
4	6	00	01	After setting the data, press the PAUSE button.
5	6	01	35	After setting the data, press the PAUSE button.
6	6	02	04	After setting the data, press the PAUSE button. Sets the R ratio display mode.
7	F	38		Change data using the PLAY and STOP buttons until the R ratio data on the DDS display becomes the specification value. R ratio data = 2000h+10h × D_{F5} (D_{F5} = Page F, Address: F5 data)
8	6	02	05	After setting the data, press the PAUSE button. Sets the B ratio display mode.
9	F	39		Change data using the PLAY and STOP buttons until the B ratio data on the DDS display becomes the specification value. B ratio data = 80h+100h × D_{F6} (D_{F6} = Page F, Address: F6 data)
10				Press the PAUSE button.

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, press the PAUSE button.
2	6	02	00	Releases the B ratio display mode.
3	F	02	00	After setting the data, press the PAUSE button. (End 2)
4				Turn off the UNREG power supply once, then turn it on.
5	6	00	00	After setting the data, press the PAUSE button. (End 1)

18. White balance check

Subject	White pattern standard picture frame
Filter	Color temperature correction filter C14 ND filter 1.0 and 0.3
Measurement Point	VIDEO output terminal (Terminated in 75 Ω)
Measuring Instrument	Vectorscope
Specification Value	Fig. 6-1-11. A ~ C

Note : Confirm that the "Camera-shaking correction" and "Digital Zoom" are turned Off.
(CCD-TRV21/TRV21E)

Check procedure:

Order	Page	Address	Data	Procedure	Condition
1				Check that the lens is not covered by either filter.	
2	6	01	0F	After setting the data, press the PAUSE button.	
3				Check that the white luminance point is located within the circle shown in Fig. A.	Without filter.
4	6	01	00	After setting the data, press the PAUSE button.	
5	6	01	23	After setting the data, press the PAUSE button.	
6				Put the C14 filter on the lens.	
7				Check that the white luminance point is located within the circle shown in Fig. B.	C14 filter.
8				Remove the C14 filter and put ND filter 1.3 (1.0 + 0.3) on the lens.	
9				Check that the white luminance point is located within the circle shown in Fig. C.	ND Filter 1.3

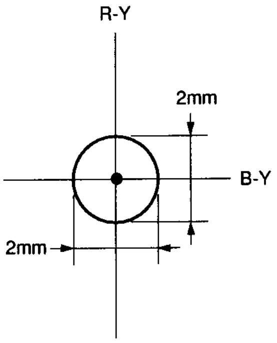


Fig. 6-1-11. A

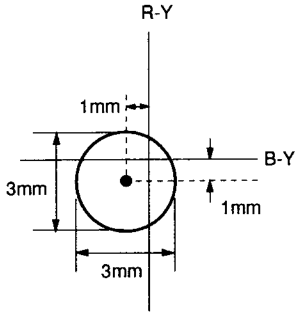


Fig. 6-1-11. B

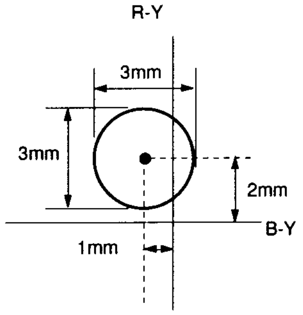


Fig. 6-1-11. C

Processing after Adjustments:

Order	Page	Address	Data	Procedure
1	6	01	00	After setting the data, press the PAUSE button.
2	6	00	00	After setting the data, press the PAUSE button.

〔CCD-TRV21/TRV21E MODEL〕

19. Camera-shaking correction adjustment

The "Camera-shaking correction adjustment" is necessary only when the angular speed sensor is replaced. If microprocessors or circuit is replaced or repaired, this adjustment is not necessary. Make operation check only.

Subject	
Measurement Point	VIDEO output terminal (Terminated in 75Ω)
Measuring Instrument	Oscilloscope or TV monitor
Adjustment Page	F
Adjustment Address	42 43
Specification Value	Horizontal residual vibration ≦0.5μsec Vertical residual vibration ≦0.2msec

Note 1: Caution when replacing parts
The two types of parts: ENC05EA and ENC05EB are supplied. Use the same type of sensor as that of the defective sensor. If different type of either ENC05EA or ENC05EB is used, picture can vibrate vertically or horizontally during camera-shake correction. After replacement, make adjustment as described.

Note 2: Caution on angular speed sensor
The angular speed sensor has high precision vibrator inside. If the sensor is dropped, balance of the vibrator is lost resulting in faulty operation. Handle the sensor carefully.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	42	07	After setting the data, press the PAUSE button.
3	6	01	3F	After setting the data, press the PAUSE button.
4				Obtain the vertical data from the following equation using the value indicated on SE650 of the TZ-5 board as the sensor sensitivity value. (Result of calculation must be converted to hexadecimal value.) $[\text{Vertical data}]\ \text{Hex} = \frac{148\text{d}}{\text{sensor sensitivity value}} \times [\text{Hex}]$
5	F	42		Set the [Vertical data] Hex value to the page F, address 42 and press the PAUSE button.
6				Obtain the horizontal data from the following equation using the value indicated on SE651 of the TZ-5 board as the sensor sensitivity value. (Result of calculation must be converted to hexadecimal value.) $[\text{Horizontal data}]\ \text{Hex} = \frac{121\text{d}}{\text{sensor sensitivity value}} \times [\text{Hex}]$
7	F	43		Set the [Horizontal data] Hex value to the page F, address 43 and press the PAUSE button.
8				Confirm that "Camera-shaking correction adjustment" works correctly.
9	6	00	00	After setting the data, press the PAUSE button. (End)
10	6	42	00	After setting the data, press the PAUSE button.
11	6	01	00	After setting the data, press the PAUSE button.

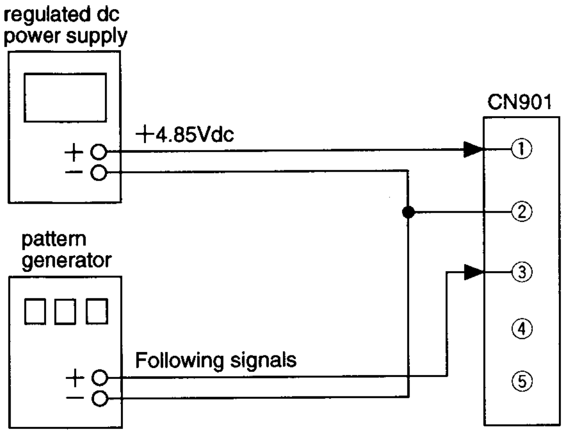
Note : Phase of the residual vibration must be in the same phase as that while no correction is applied.

20. Electronic viewfinder system adjustments (VF-102 board)

Note : About 2200V dc is applied to CRT anode and about 200 Vdc to the grid. Be careful not to touch them. If hand touches them, there is danger of electric shock.

Preparation :

1. Disconnect a flexible board from CN901 on VF-102board.
2. Connect equipments as follows.



Required signals

( ) : CCD-TRV11E/TRV21E

1. Monoscope signal

Output amplitude:	1.0 V p-p (75Ω terminated)
Horizontal resolution:	600 TV lines or more
Vertical resolution:	350 TV lines or more

2. Dot pattern signal

Output amplitude	1.0 V p-p (75Ω terminated)

3. Contrast signal

Output amplitude	0.5 V p-p (75Ω terminated)
fH:	15.750kHz (15.625kHz)
fV:	60Hz (50Hz)

Others: Complies with NTSC (PAL). (Refer to Fig. 6-1-12.)

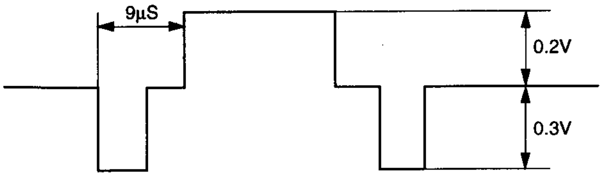


Fig. 6-1-12

20-1. Power supply voltage check

Measuring Instrument	Digital voltmeter
EVF5V	
Measurement Point	CN901 Pin ①
Specification Value	4.85±0.01Vdc

20-2. Horizontal and vertical position

Purpose: Maintains horizontal position.

Adjustment error: Horizontal position cannot be maintained.

Signal	Monoscope signal
Adjustment	
Specification Value	Overscan 7±3% (horizontal) (one side) Overscan 7±5% (vertical) (one side)

Adjustment procedure:

Order	Procedure
1	Confirm that the horizontal and vertical picture sizes satisfy the specification values.

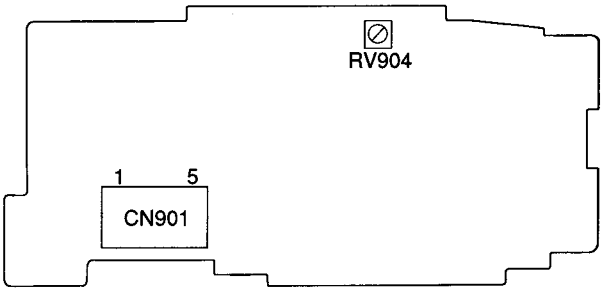
20-3. BRIGHT adjustment

Signal	Contrast signal
Adjustment	RV904
Specification Value	19±4cd/m²

Adjustment procedure:

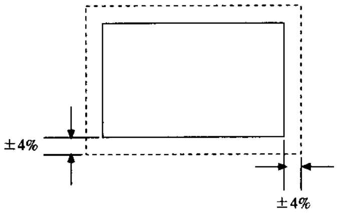
Order	Procedure
1	Brightness of the dark portion of the contrast signal satisfies the specification value.
2	heck by inputting the character generator signal that too much halation does not exist.

VF-102 BOARD (SIDE A)



20-4. Centering adjustment

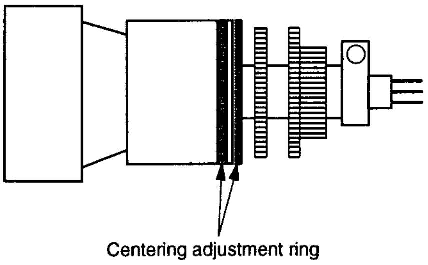
Signal	Monoscope signal
Adjustment	DY centering
Specification Value	±4%



Adjustment procedure:

Order	Data Procedure
1	Adjust DY centering adjustment ring so that margins at top, bottom, right and left are equal.

Note : The centering position is affected by earth magnetism. Rotate the camera 360 degrees and find the amount of centering change. Make the adjustment to the center of the change.



20-5. Focus adjustment

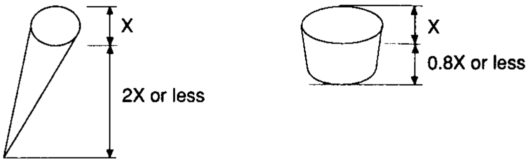
Signal	Monoscope signal
Adjustment	DY focus ring
Specification Value	Horizontal resolution is 350 lines or more.

Adjustment procedure:

Order	Procedure
1	Adjust focus ring for optimum focus. Confirm that the horizontal resolution satisfies the specification.

20-6. Diffraction adjustment

Signal	Dot pattern, Monoscope signal
Adjustment	DY diffraction adjustment ring
Specification Value	Refer to the illustration below.



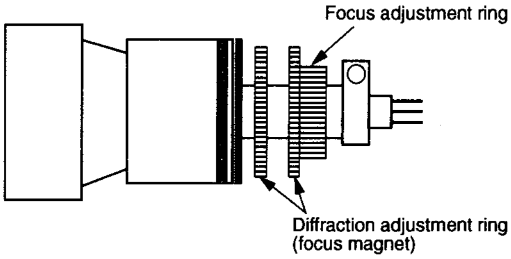
Adjustment procedure:

Order	Procedure
1	Adjust the diffraction adjustment ring so that tail of a dot must be smaller than 2 times of dot diameter, or the fan-shaped diffraction must smaller than the dot diameter.
2	If the focus and centering are affected by this adjustment, input monoscope signal and repeat focus and centering adjustments.

Related Adjustments:

Focus adjustment

Centering adjustment



21. LCD system adjustments (PD-67 board)

Note 1: The backlight (fluorescent lamp is driven by high voltage AC power supply.
Therefore, be careful not to touch the back light holder with hand or you will receive an electric shock.

Note 2: When replacing the LCD unit, be careful not to damage the LCD unit with static electricity.

Note 3: Set the BRIGHT knob to the center click position.

[Adjustment connector]

Most measurement points of the LCD adjustment are concentrated at the CN301 of the PD-67 board. Connect the measuring equipment to CN301 via the measuring pin tool. The following table shows the pin numbers and signal names of CN301.

Pin No.	Signal Name	Pin No.	Signal Name
1	VR	2	VG
3	VB	4	HDB
5	GND	6	SRT
7	SYNC	8	N.C.
9	-7.5V		

1. Multi CPC Parts code:J-6082-311-A
2. Aligment tape
   NTSC (CCD-TRV11/TRV21) :
   WR5-4NL (8-967-995-51)
   PAL (CCD-TRV11E/TRV21E) :
   WR5-4CL (8-967-995-56)

[Video input signal for adjustment]

If the signal column specifies the "Color bar signal with the chroma and burst signals turned OFF", input the color bar signal whose chroma and burst signals are turned OFF. Confirm that the signal level at SD-21 board CN102 pin ⑦ has 1.00Vp-p before starting adjustment.

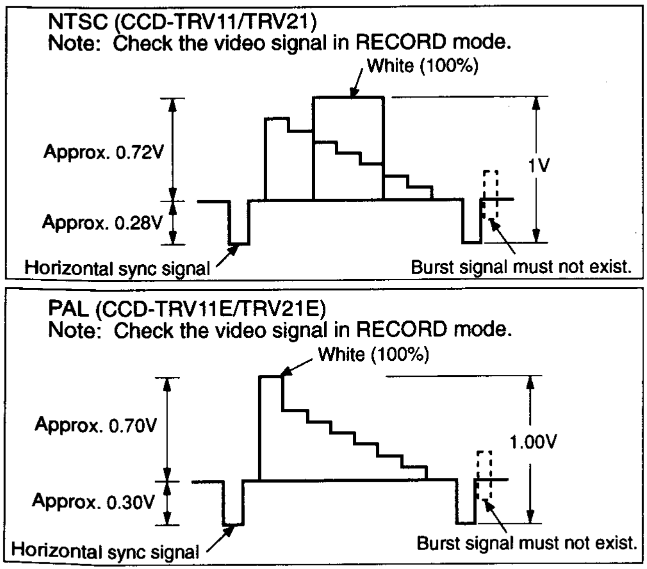

NTSC (CCD-TRV11/TRV21)
Note: Check the video signal in RECORD mode.
White (100%)
Approx. 0.72V
1V
Approx. 0.28V
Horizontal sync signal
Burst signal must not exist.
PAL (CCD-TRV11E/TRV21E)
Note: Check the video signal in RECORD mode.
White (100%)
Approx. 0.70V
1.00V
Approx. 0.30V
Horizontal sync signal
Burst signal must not exist.

Fig. 6-1-13 Color bar signal with chroma and burst signals switched OFF.

[Power supply voltage adjustment]

Adjust the power supply voltage to be input to the battery terminal so that the voltage across PD-67 board CN303 pins ⑩ (LCD UNREG) and pins ⑪ or ⑫ (UNREG GND) is 6.5 ± 0.1Vdc.

Power supply voltage check (PD-67, SD-21 boards)

Subject	Any subject
Measuring equipment	Digital voltmeter
DAC 3.1V check	
Measurement point	CN102 Pin ⑤ (SD-21)
Specification	3.1±0.1Vdc (GND : CN102 Pin ⑥)
LCD 4.9V check	
Measurement point	CN303 Pin ⑥ (PD-67)
Specification	4.85±0.05Vdc (GND : CN303 Pin ⑦)
LCD UNREG check	
Measurement point	CN303 Pin ⑩ (PD-67)
Specification	6.5±0.1Vdc (GND : CN303 Pin⑪ or ⑫)

21-1. EVR initial data input

Mode	Stop
Signal	Any signal
Adjustment page	F

Note : Do not rewrite the EE PROM data except when it is necessary such as replacement of SD-21 board IC101.

Adjustment procedure:

( ) : CCD-TRV11E/TRV21E

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8	BA(00)	After setting the data, press the PAUSE button.
		D9	B5(60)	
		DA	70(6A)	
		DB	85	
		DC	80	
		DD	65(7A)	
		DE	8A(C0)	
		DF	AA	
		E0	74	
		E1	74	
		E2	90	
		E3	70	
3	6	00	00	After setting the data, press the PAUSE button. (End)

21-2. –7.5V adjustment

Mode	Record
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ⑨ (–7.5V)
Measuring equipment	Digital voltmeter
Adjustment page	F
Adjustment address	E3
Specification	A=–7.5±0.1Vdc

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E3		Change data using the PLAY and STOP buttons so that the voltage goes to the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

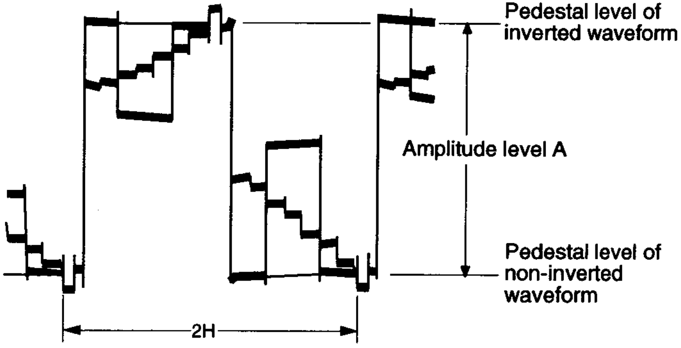
21-3. BRIGHT adjustment

Purpose: Adjusts video signal level to drive the LCD panel.

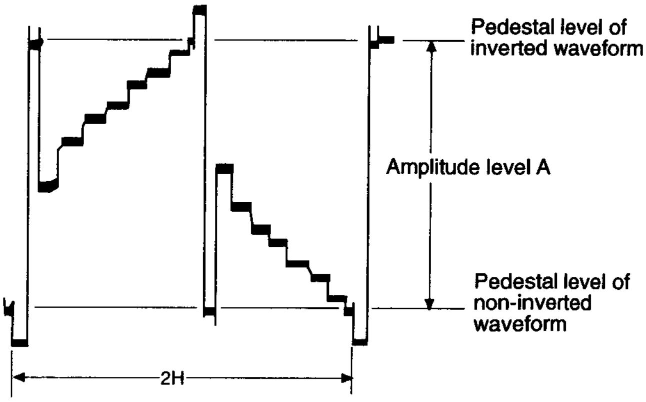
Adjustment Error: Picture on LCD will be white saturated or black compressed.

Mode	Record
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	D8
Specification	A=3.20±0.05V

CCD-TRV11/TRV21


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

CCD-TRV11E/TRV21E


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8		Change data using the PLAY and STOP buttons until the VG signal amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

Note: The adjustment data must be within the range from 41 to BF.

Related Adjustment: CONTRAST adjustment

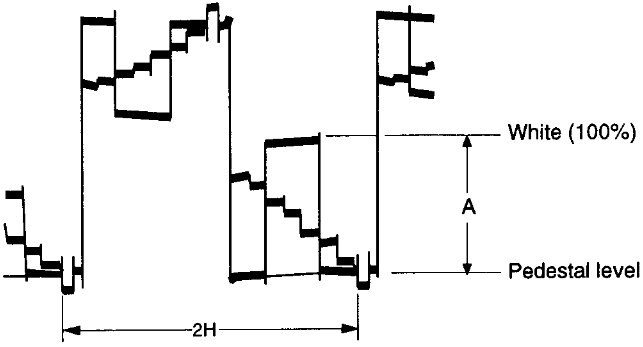
21-4. CONTRAST adjustment

Purpose: Adjusts contrast of LCD picture

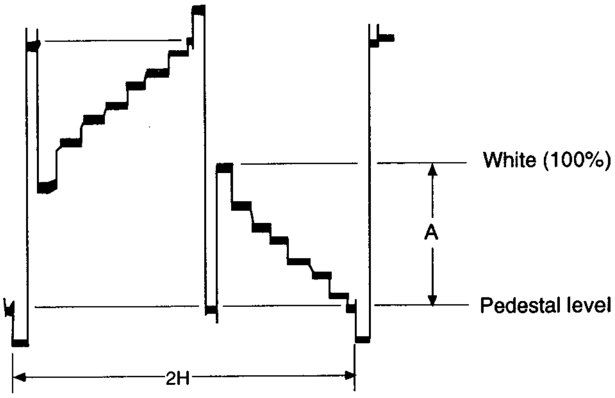
Adjustment Error: Details of black will be lost, or white saturated/black compressed picture.

Mode	Record
Signal	Color bar signal with chroma and burst signals switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	DD
Specification	A=3.10±0.05V

CCD-TRV11/TRV21



CCD-TRV11E/TRV21E



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DD		Change data using the PLAY and STOP buttons until the amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

Note: After this adjustment, check BRIGHT of viewfinder.
If it is incorrect, adjust it again.

Related Adjustment: BRIGHT adjustment

21-5. COLOR adjustment

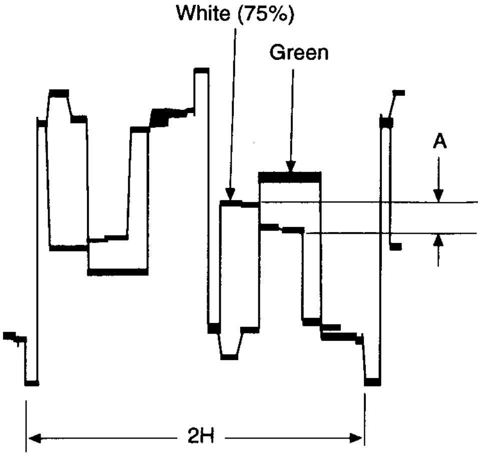
Purpose: Adjusts color for standard level.

Adjustment Error: Color will be too much or too small.

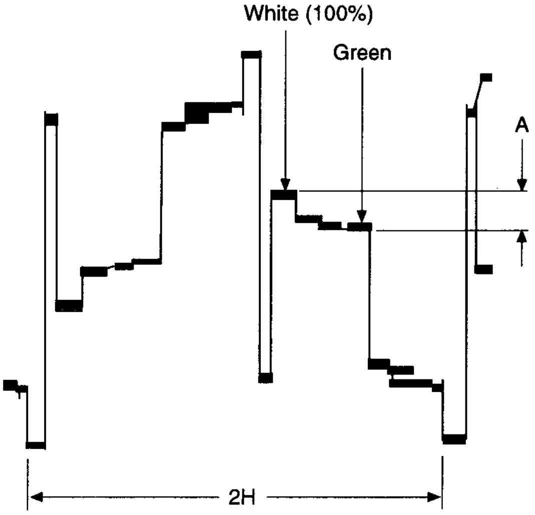
( ) : CCD-TRV11E/TRV21E

Mode	Record
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	D9
Specification	A=0.00±0.05V (–0.50±0.05V)

CCD-TRV11/TRV21



CCD-TRV11E/TRV21E



Adjustment procedure:

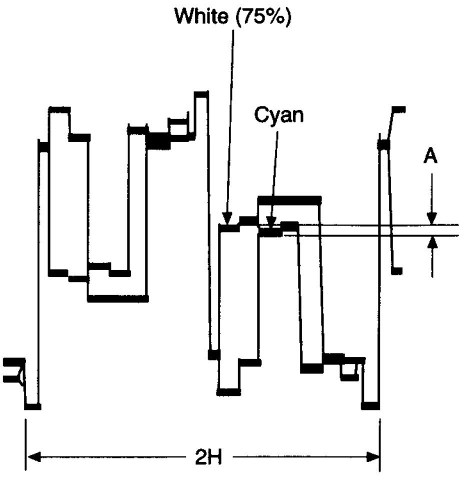
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D9		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-6. HUE adjustment (CCD-TRV11/TRV21)

Purpose: Adjust for standard hue.

Adjustment Error: Unnatural hue.

Mode	Record
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	DA
Specification	A=0.00±0.05V



Adjustment procedure:

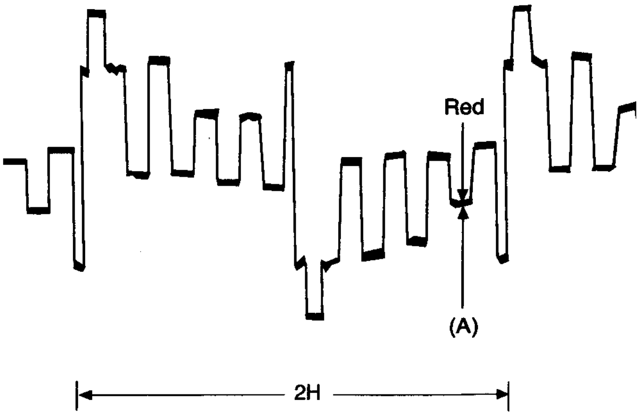
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DA		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-7. BURST CLEANING adjustment (CCD-TRV11E/TRV21E)

Purpose: Adjust for standard hue.

Adjustment Error: Unnatural hue.

Mode	Record
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ③ (VB)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	DA
Specification	Minimum amplitude of the flicker of the red position.



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DA		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-8. V. COM adjustment

Purpose:	Adjusts for correct voltage of the DC bias voltage of the common electrode signal of the LCD panel.
Adjustment Error:	Details of the LCD picture will be lost. Flicker occurs easily. Vertical stripes will appear.

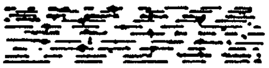
Mode	Playback PAUSE
Signal	Alignment tape: color bar for operation check segment (WR5-4CL/4NL)
Measurement point	To be confirmed on LCD display
Measuring equipment	
Adjustment page	F
Adjustment address	DF

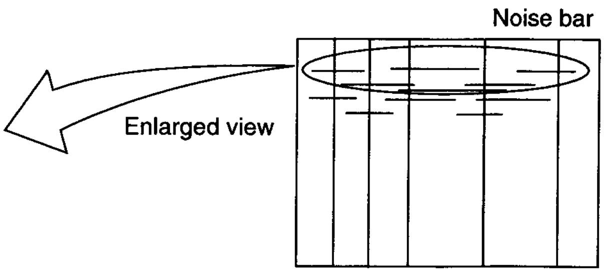
Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2				Establish the PB PAUSE state using operation keys of the camera.
3	F	DF		Change data using the PLAY and STOP buttons of the adjustment remote commander and observe the noise bar portion. Find the noise bar showing noise similar to head clogging. Keep pressing the PLAY button until black dots can be seen clearly. This data is D_A. Then keep pressing the STOP button until black dots can be seen clearly. This data is D_B.
4				Convert the D_A and D_B to the decimal value which are D_A' and D_B'. (Refer to Table 7-5-2.) [Conversion Table between hexadecimal and decimal values]. Then calculate D_C' using the equation $D_C' = (D_A' + D_B') \div 2$
5	F	DF		Set data to DC and press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)

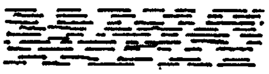
Note: This adjustment must be executed after the BRIGHT and CONTRAST adjustments are completed.

Keep pressing the PLAY button.

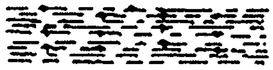




Find the noise bar showing noise similar to head clogging.



Keep pressing the STOP button.

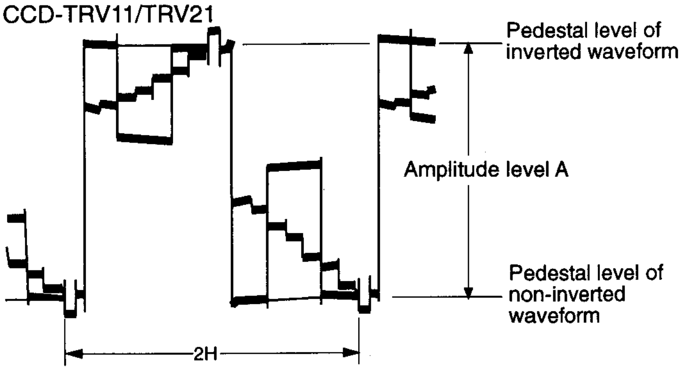


21-9. White balance preset adjustment (1)

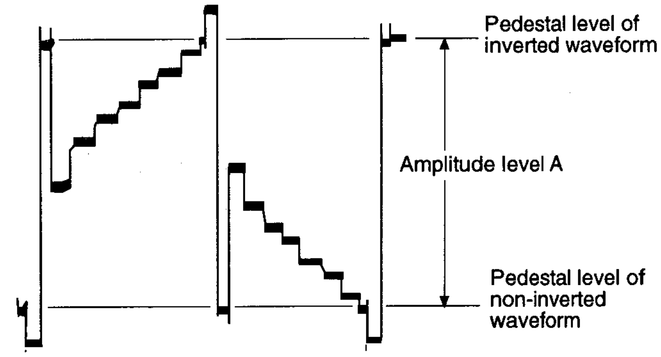
Purpose: Make the preliminary adjust before the white balance final adjustment

Mode	Record
Signal	Color bar signal with chroma and burst signals switched OFF
Measurement point	CH1: PD-67 board CN301 pin ② (VG) CH2: PD-67 board CN301 pin ① (VR)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	DB
Specification	Difference of amplitude between the VR and VG signals=0±0.1V

CCD-TRV11/TRV21


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

CCD-TRV11E/TRV21E


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform

Adjustment procedure:

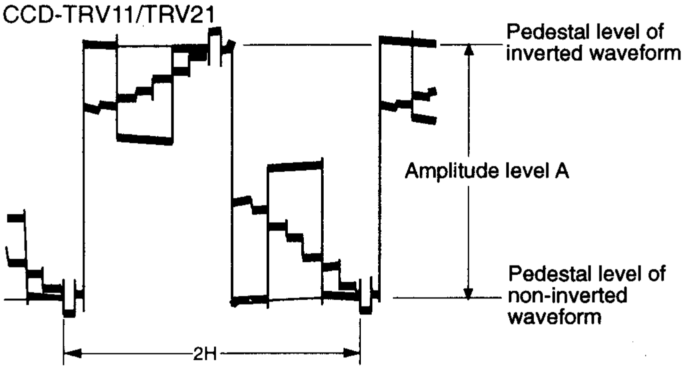
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DB		Change the B3 data using the PLAY and STOP buttons until the VR and VG signals have the same amplitude.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-10. White balance preset adjustment (2)

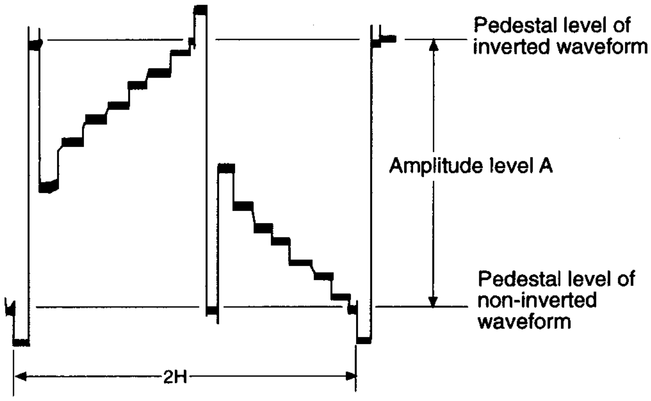
Purpose: Make the preliminary adjust before the white balance final adjustment

Mode	Record
Signal	Color bar signal with chroma and burst signals switched OFF
Measurement point	CH1: PD-67 board CN301 pin ② (VG) CH2: PD-67 board CN301 pin ③ (VB)
Measuring equipment	Oscilloscope [External trigger: IC302 pin ⑪ (FRP)]
Adjustment page	F
Adjustment address	DC
Specification	Difference of amplitude between the VB and VG signals=0±0.1V

CCD-TRV11/TRV21


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

CCD-TRV11E/TRV21E


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	00	After setting the data, press the PAUSE button. (Preparation)
2	F	DC		Change the B4 data using the PLAY and STOP buttons until the VR and VG signals have the same amplitude.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-11. White balance adjustment

Purpose: Adjust for correct white balance.

Adjustment Error: Color reproduction on LCD display will be poor.

Mode	Record
Signal	Color bar signal with chroma and burst signals switched OFF
Measurement point	To be confirmed on LCD display
Measuring equipment	
Adjustment page	F
Adjustment address	DB DC
Specification	Image on the LCD display must not have any color.

Note1: Start adjustment within 30±5 seconds after the back-light turns ON.

Note2: During adjustment, the LCD protection film must be peeled off.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DB DC		Change the DB and DC data using the PLAY and STOP buttons until the image on the LCD display has no color.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-12. VCO adjustment

Purpose: Sets the VCO free-run frequency.

Adjustment Error: Incorrect picture on EVF

( ) : CCD-TRV11E/TRV21E

Mode	Stop
Signal	No signal
Measurement point	CN301 pin ④ (HDB)
Measuring equipment	Frequency counter
Adjustment page	F
Adjustment address	DE
Specification	f=15734±30Hz (15625±30Hz)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Press the DATA SCREEN button of the remote commander to disappear the display.
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3	F	DE		Change data using the PLAY and STOP buttons until the oscillating frequency satisfies the specification.
4				Press the PAUSE button.
5	6	00	00	After setting the data, press the PAUSE button. (End)

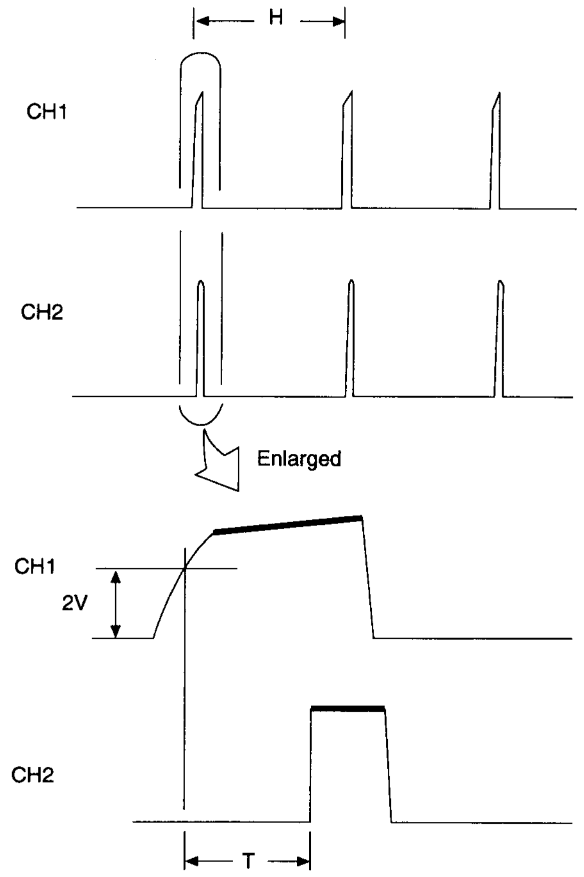
21-13. Horizontal display position adjustment

Purpose:	Adjusts the horizontal position of picture on LCD display.
Adjustment Error:	Picture position will be shifted left or right.

( ) : CCD-TRV11E/TRV21E

Mode	Record
Signal	Color bar signal
Measurement point	CH1: PD-67 board CN301 pin ⑦ (SYNC) CH2: PD-67 board CN301 pin ⑥ (SRT)
Measuring equipment	Oscilloscope
Adjustment page	F
Adjustment address	E2
Specification	T=1.2±0.1μsec (0.5±0.1μsec)

Note: Set the LCD so that it is directed toward the lens.
(The waveform is different depending upon direction.)

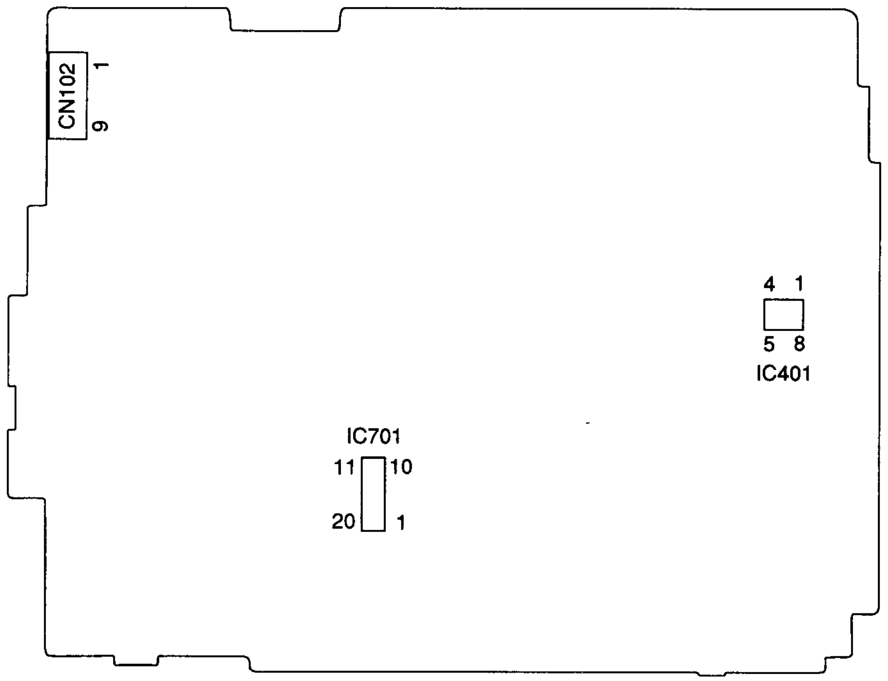

H
CH1
CH2
Enlarged
CH1
2V
CH2
T

Adjustment procedure:

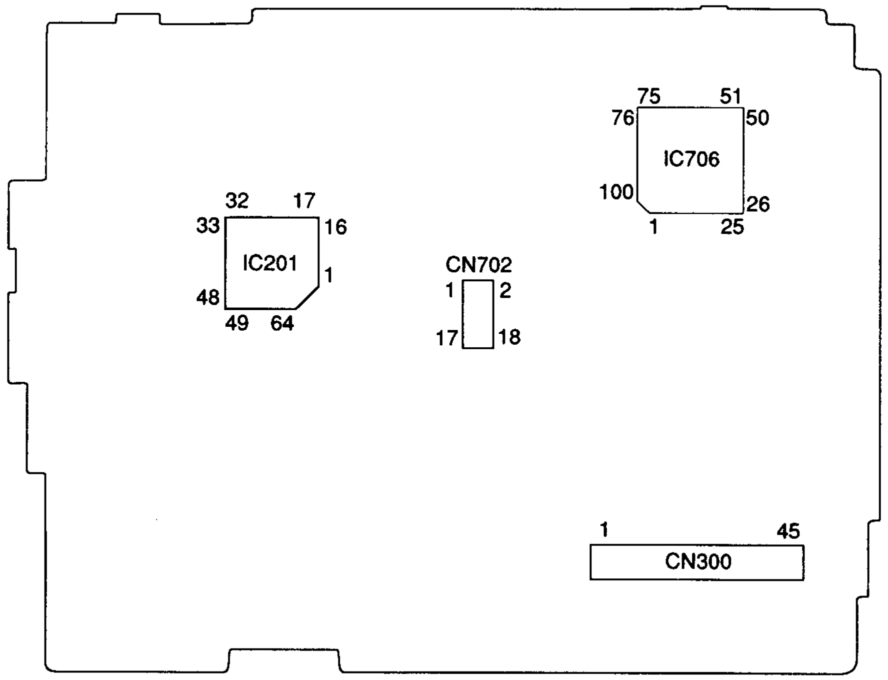
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E2		Change data using the PLAY and STOP button until the delay time "T" satisfies the specification.
3				After setting the data, press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VC-167 BOARD (SIDE A)


CN102
1
9
4 1
5 8
IC401
IC701
11
10
20
1

VC-167 BOARD (SIDE B)


75
51
76
50
IC706
100
26
1
25
32
17
33
16
IC201
1
48
49
64
CN702
1
2
17
18
1
45
CN300

6-2. MECHANISM SECTION ADJUSTMENTS

Refer to the separate "8 mm Video Mechanism Section Adjustment Manual Ⅶ B Mechanism " for adjustment, check procedure and mechanical parts replacement.

2-1. HOW TO OPERATE THE MECHANISM AFTER THE CASSETTE COMPARTMENT IS REMOVED

1. How to load a cassette tape:

1) Refer to "1. Disassembly" and turn the main power on with the cabinet and camera section removed. (It enables to operate the mechanical deck.)
2) Connect the adjustment remote commander and set the NORM - ADJUST (HOLD) switch to ADJUST (ON) position.
3) Check that the main power is being supplied.
4) Select page: 6, address: 00, set data :01 and press the PAUSE button.
5) Select page: F, address: 02, set data: 01 and press the PAUSE button.
6) Turn off the power supply once, then turn it on.
7) Set the NORM - ADJUST (HOLD) switch to NORM (OFF) position. (The adjustment remote commander can be disconnected hereafter.)
8) Press the push-switch-1 knob in the direction of arrow which sets the machine into loading mode.

★ PB, FF/REW and CUE/REV operations are possible.

9) After completing all steps of above operation, be sure to perform "4. Processing after operation".

2. How to establish RECORD mode:

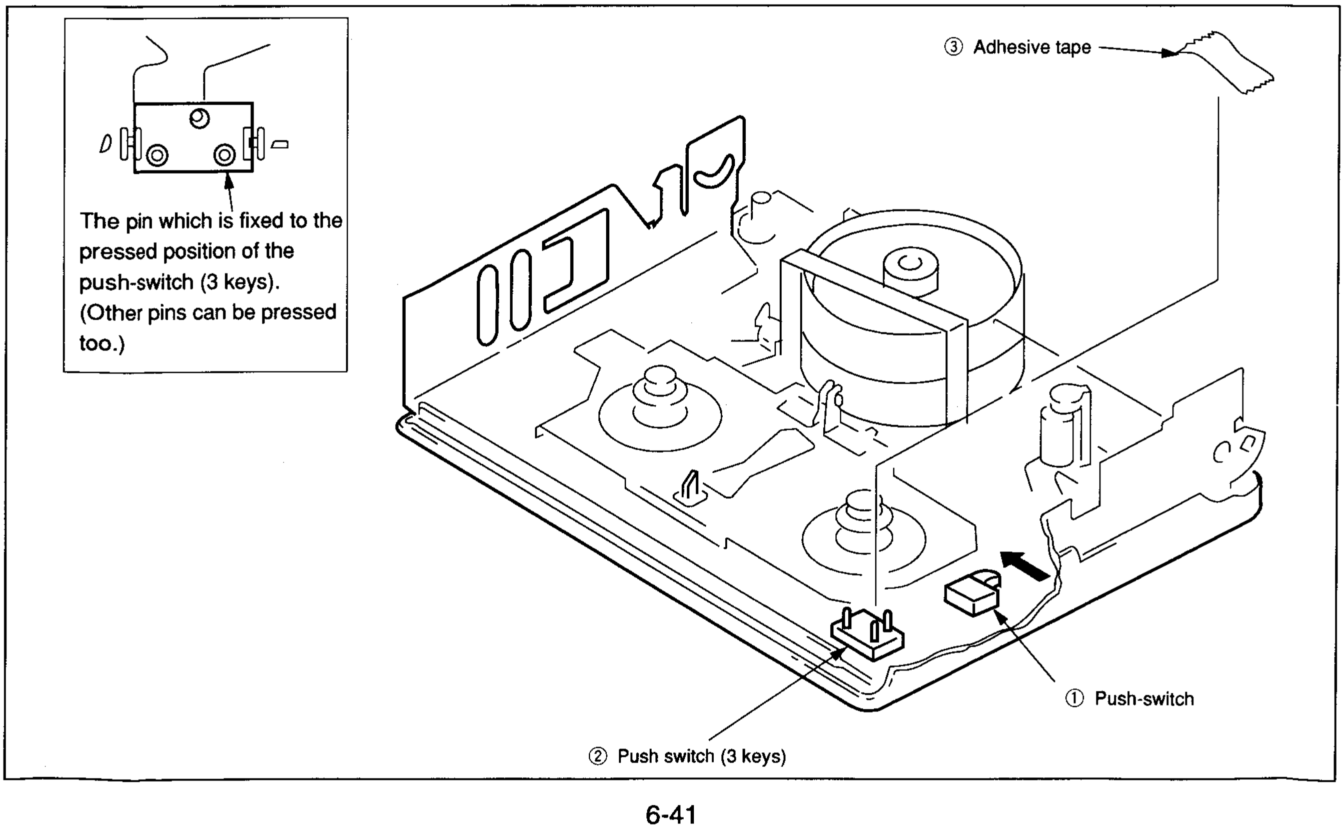
1) Press pin of the push-switch 2 (ON state) and keep the ON state by fixing with adhesive tape.
2) Turn the main power switch ON (select VTR or CAMERA position of camera).
3) Set the RECORD switch to ON.
   (When the test mode is selected, the rotation detection of the S and T reel tables is muted, and the top end sensor is disable which allow to run the tape.)

3. How to eject a cassette tape:

1) Press the EJECT switch to ON.

4. Processing after operation

1) Connect the adjustment remote commander and set the NORM - ADJUST (HOLD) switch to ADJUST (ON) position.
2) Select page 6, address: 00, set data: 01 and press the PAUSE button.
3) Select page: F, address: 02, set data: 00 and press the PAUSE button.
4) Remove the power supply to the machine.


The pin which is fixed to the pressed position of the push-switch (3 keys). (Other pins can be pressed too.)
③ Adhesive tape
① Push-switch
② Push switch (3 keys)

2-2. TAPE PATH ADJUSTMENT

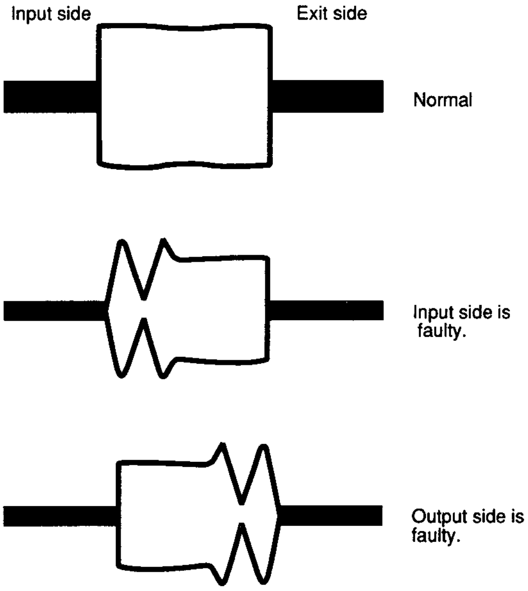
Purpose: Adjusts the head linearity.
Adjustment Error: Noise appears on top and bottom of display when playing back the tape recorded by other machines.

1. Preparations for adjustments

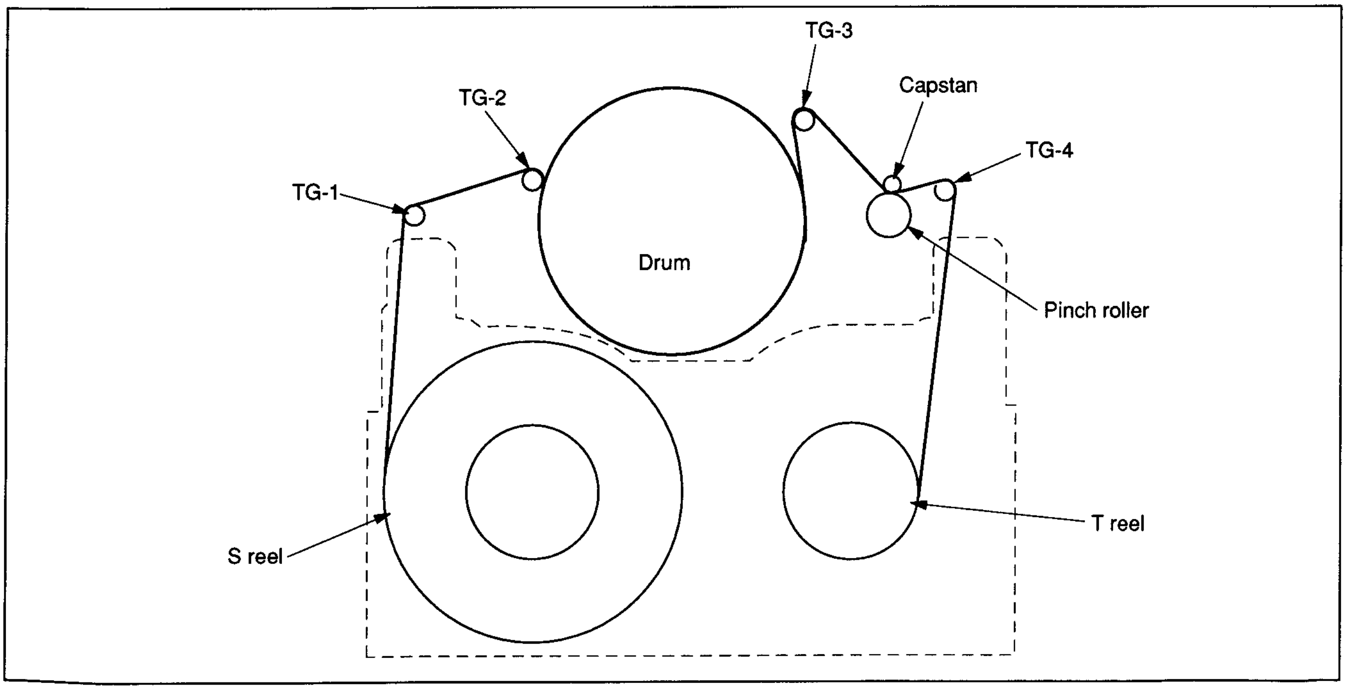
1) Clean the tape running surface (tape guide, drum, capstan, pinch roller).
2) Connect the adjustment remote commander to the LANK terminal (CF-42 board J480).
3) Set the NORM - ADJUST (HOLD) switch to ADJUST (ON) position.
4) Check that the main power is being supplied.
5) Select page: 6, address: 00, set data :01 and press the PAUSE button.
6) Select page: F, address: 02, set data: 03 and press the PAUSE button.
7) Turn off the power supply once, then turn it on.
8) Connect an oscilloscope.
   CH1: VC-167 board CN102 pin ①.
   External trigger: VC-167 board CN102 pin ⑧.
9) Playback the tracking alignment tape (WR5-1CP/1NP).*
10) Check to see that RF waveform is flat at input and exit sides on oscilloscope.
   If it not flat. Tape Path Adjustment" of the 8 mm Video Mechanism Section Adjustment Manual VII B Mechanism.
11) After completing the adjustment, perform "2-1-4. Processing after operation".

VC-167 board CN102

1	PB RF
2	REC 2
3	GND
4	EMPH IN
5	CAM Y IN
6	DEEMPH OUT
7	BPF ADJ
8	RF SWP
9	CAP FG



* WR5-1NP : NTSC (CCD-TRV11/TRV21)
WR5-1CP : PAL (CCD-TRV11E/TRV21E)



6-3. VIDEO SECTION ADJUSTMENT

When performing adjustments, refer to the layout diagrams for adjustment related parts beginning from page 6-74.

Perform the video section adjustment in the sequence as described.

[Adjustment sequence]

1) Servo system adjustment
    1.SYNC LEVEL/BURST LEVEL adjustment.
    2.Switching position adjustment
    3.Capstan FG offset adjustment
2) Playback frequency response characteristics adjustment
3) DEMD OUT adjustment
4) YD OUT LEVEL adjustment
5) Chroma level check
6) PB Y level adjustment
7) FE OSC check
8) Emphasis input level adjustment
9) Y FM deviation adjustment
10) Y FM carrier frequency adjustment
11) Chroma emphasis fo adjustment
12) REC Y level adjustment
13) REC L level adjustment
14) REC C level adjustment

3-1. PREPARATIONS BEFORE ADJUSTMENT

The following measuring equipment are used for video section adjustment.

3-1-1. Equipment required

1) Monitor TV
2) Oscilloscope, dual trace, 30 MHz bandwidth or more with delay mode function.
   (Use 10:1 probe unless otherwise specified.)
3) Frequency counter
4) Digital voltmeter
5) Audio generator
6) Audio level meter
7) Audio distortion meter
8) Audio attenuator
9) Regulated power supply
10) Alignment tape

NTSC (CCD-TRV11/TRV21)

- For tracking adjustment (WR5-1NP)
  Parts code: 8-967-995-02
- For normal mode video frequency response adjustment (WR5-6N)
  Parts code: 8-967-995-12
- For confirmation of normal mode operation
  for SP (WR5-5NSP)
  Parts code: 8-967-995-42
  or (WR5-4NSP)
  Parts code: 8-967-995-41
  for LP (WR5-4NL)
  Parts code: 8-967-995-51

PAL (CCD-TRV11E/TRV21E)

- For tracking adjustment (WR5-1CP)
  Parts code: 8-967-995-07
- For normal mode video frequency response adjustment (WR5-6C)
  Parts code: 8-967-995-17
- For confirmation of normal mode operation
  for SP (WR5-5CSP)
  Parts code: 8-967-995-47
  or (WR5-4CSP)
  Parts code: 8-967-995-46
  for LP (WR5-4CL)
  Parts code: 8-967-995-56

3-1-2. Precautions on adjustment

The EVF (electronic viewfinder) is not necessary for video section adjustment.
Remove the following connector to remove the EVF.
1. CF-42 board CN481 (pin-8)

After completing all adjustments, release the adjustment mode by either of the following two methods.

1) Remove the lithium battery. (In this case, data time and menu setting by users are erased. Input these data again.)
2) Return the data of the address: 00 on page:6 to 00. If the page: 2 data is changed, return the data to the original value.

3-1-3. Adjustment connector (VC-167 Board CN102)

Some video section adjustment points are concentrated to the VC-167 board CN102. Connect the measuring equipment via the tool (Multi CPC: J-6082-311-A).

Pin No.	Signal Name
1	PB RF
2	REC 2
3	GND
4	EMPH IN
5	CAM Y IN
6	DEEMPH OUT
7	BPF ADJ
8	RF SWP
9	CAP FG

3-1-4. Equipment connection

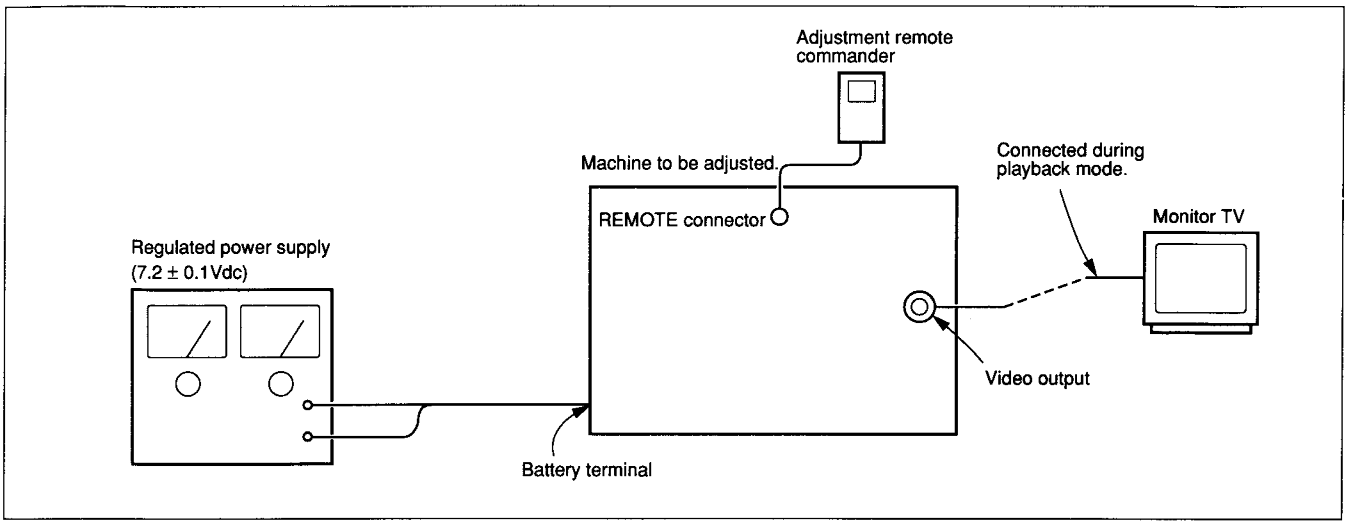

Adjustment remote commander
Machine to be adjusted.
REMOTE connector
Connected during playback mode.
Monitor TV
Regulated power supply (7.2 ± 0.1Vdc)
Video output
Battery terminal

Fig.6-3-1.

3-1-5. Alignment tape

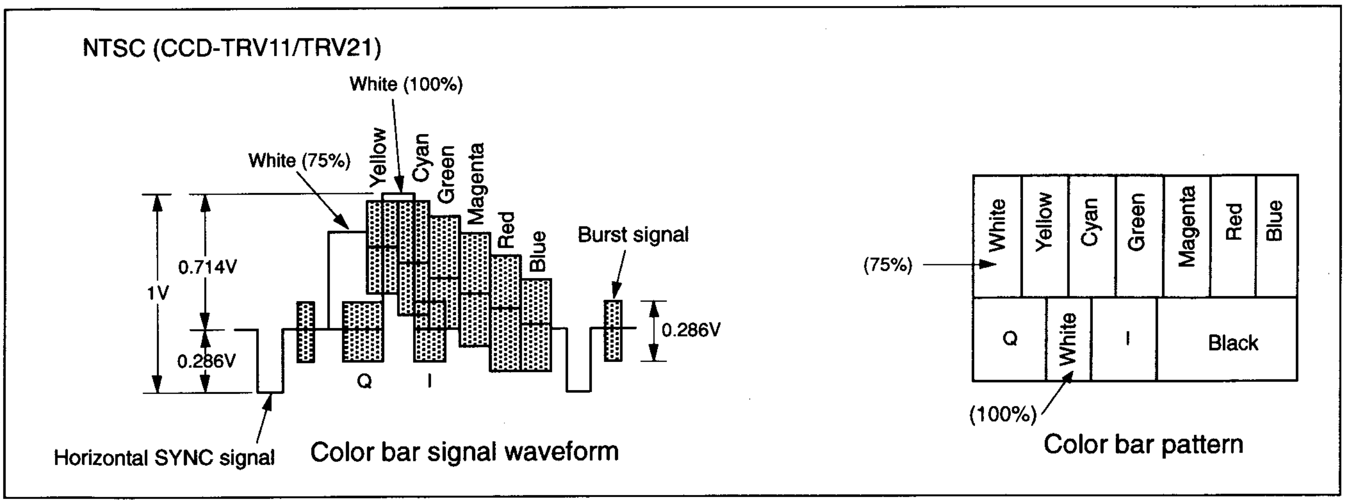
The following table shows the alignment tapes available.
Use the tape specified in the signal column for each adjustment.
If tape type is not specified in the adjustments which use the "Operation Check" tape, use any type of tape for the checking purpose.

Name	Record Mode	Tape Type	Tape Speed	Use
Tracking WR5-1CP/1NP	Normal	MP	SP	Tape path adjustment Switching position adjustment
Video frequency response adjustment WR5-6C/6N	Normal	MP	SP	Frequency response adjustment
Operation check (SP mode) WR5-5CSP/5NSP	Normal	MP	SP	Operation check
Operation check WR5-4CL/4NL	Normal	MP	LP	

Note : Tape type
MP — Metal particle tape

The color bar signal which is recorded in the alignment tape.

Note : Measured at video input/output connector (across 75 Ω termination).

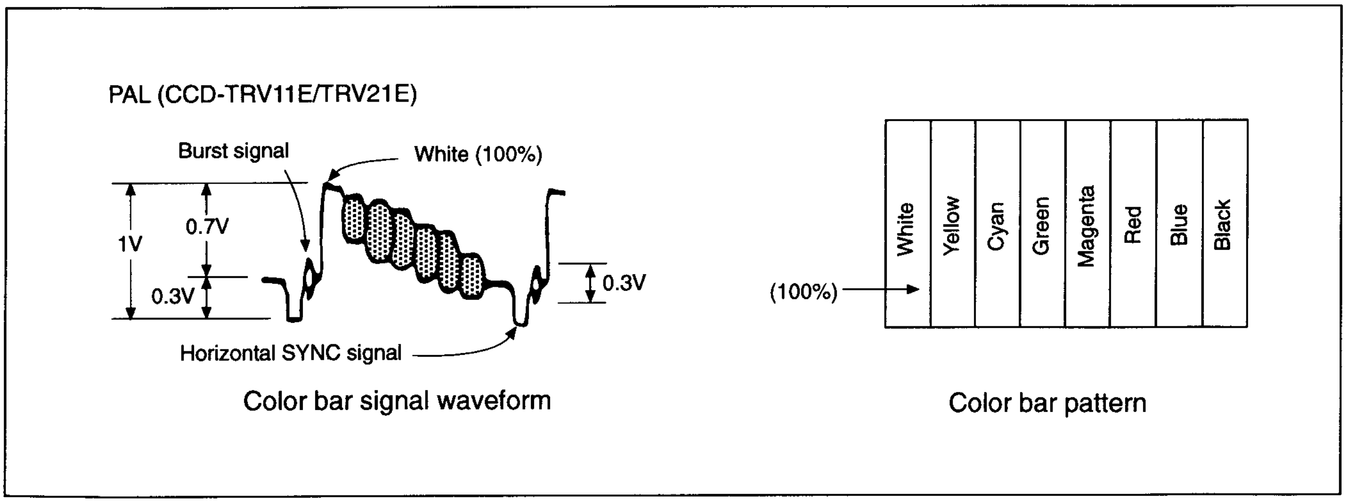

NTSC (CCD-TRV11/TRV21)

White (100%)
White (75%)
Yellow
Cyan
Green
Magenta
Red
Blue
Burst signal
1V
0.714V
0.286V
0.286V
Q
I
Horizontal SYNC signal
(75%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Q
White
I
Black
(100%)

Color bar signal waveform

Color bar pattern

Color bar signal of NTSC alignment tape


PAL (CCD-TRV11E/TRV21E)

Burst signal
White (100%)
1V
0.7V
0.3V
0.3V
Horizontal SYNC signal
(100%)
White
Yellow
Cyan
Green
Magenta
Red
Blue
Black

Color bar signal waveform

Color bar pattern

Color bar signal of PAL alignment tape

3-1-6. Output level and impedance

Video output	Pin jack Output signal: 1 V p-p, 75 Ω unbalanced, sync negative
Audio output	Pin jack Input level: -7.5 dBs (across 47 kΩ load)) Output impedance: 2.2 kΩ or less

3-2. ADJUSTMENT POINTS WHEN MAJOR PARTS ARE REPLACED

1. When drum is replaced:

"Tape Path Position Adjustment" of mechanical section adjustment

"PB RF frequency response characteristics adjustment" of the video section adjustment

"Switching position adjustment" of the servo section adjustment

3-3. POWER SUPPLY SYSTEM ADJUSTMENT

1. Power supply voltage check (VC-167 board)

Mode	Camera record
Subject	Any subject
Measuring Equipment	Digital voltmeter
MT5V check	
Measuring Point	CN300 pin㊱
Specification Value	5.0 ± 0.15Vdc
DIG 3V check	
Measuring Point	CN300 pin㉚
Specification Value	3.16 ± 0.1Vdc
AU 3 V check	
Measuring Point	CN501 pin⑤
Specification Value	3.18 ± 0.1Vdc
EVF 5V check (camera mode)	
Measuring Point	CN300 pin㊶
Specification Value	4.85 ± 0.15Vdc
EVF15 V check	
Measuring Point	CN300 pin㊵
Specification Value	14.95 ± 0.4Vdc

2. VTR & CAM mode ON

Mode	Stop
Signal	Any signal
Adjustment Page	F
Adjustment Address	02

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Set the remote commander (RM-95) to HOLD (adjustment position), and turn on the UNREG power supply.
2	6	00	01	After setting the data, press the PAUSE button.
3	F	02	03	After setting the data, press the PAUSE button.
4				Turn off the UNREG power supply once, then turn it on.

How to cancel the VTR &CAM mode ON.

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button.
2	F	02	00	After setting the data, press the PAUSE button.
3				Turn off the UNREG power supply once, then turn it on.

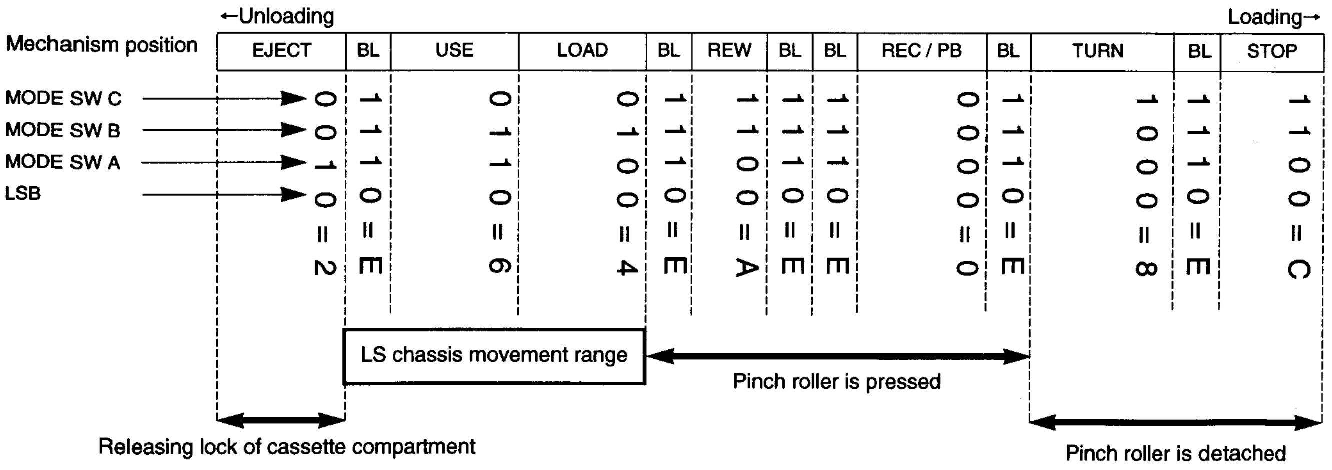
3. EMG code (Emergency code)

The emergency codes are stored in the addresses: E4, E8 and EC corresponding to the type of errors occurred. Types of error code are shown in the following table.

Code	Error Status
00	No error
10	Loading motor error during loading
11	Loading motor error during unloading
20	T reel error during unloading
21	S reel error during unloading
22	T reel error in normal mode
23	S reel error in normal mode
30	FG error during capstan startup
31	FG error during capstan normal speed
40	FG error during drum startup
41	PG error during drum startup
42	FG error during normal rotation of drum
43	Not used
44	Phase error during normal rotation of drum

4. MSW code

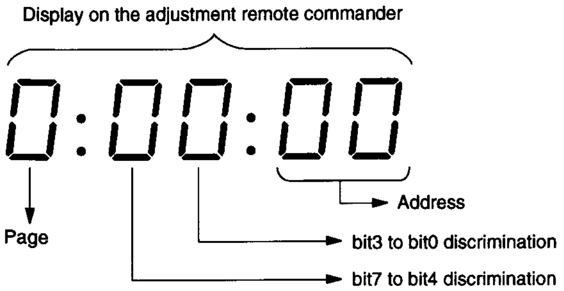
- The lower digit data of the page F: address: E6, EA and EE indicate the MSW code (mode switch code) when an error occurs.
- The upper digit data of the page F: address: E6, EA and EE indicate the MSW code (mode switch code) of mode transition (mode SW code before mode transition) when an error occurs.
- The lower digit data of the page F: address: E7, EB and EF indicate the MSW code (mode switch code) of transition target (code to which the machine is going to enter) when an error occurs.


←Unloading
Loading→
Mechanism position
EJECT
BL
USE
LOAD
BL
REW
BL
BL
REC / PB
BL
TURN
BL
STOP
MODE SW C
MODE SW B
MODE SW A
LSB
0010=2
1110=E
0110=6
0100=4
1110=E
1100=A
1110=E
1110=E
0000=0
1110=E
1000=8
1110=E
1100=C
LS chassis movement range
Pinch roller is pressed
Releasing lock of cassette compartment
Pinch roller is detached

Mechanism Position	MSW Code	Detail of Content
EJECT	2	The position where the cassette compartment lock is released.The end position in the unthread-end direction. The mechanism does not move any more in the direction of unloading direction.
BL	E	Blank code. The code which separates a code from another code. The machine does not stop at the code while is it operating.
USE	6	EJECT completed position. If a cassette is ejected, it stops at this position. If mechanism moves in the loading direction, the TG1 guide and the TG9 guide start moving.
LOAD	4	The code during loading and unloading. This code is output while the LS chassis is moving.
REW	A	REW position. The position to activate the REW and FR/REV.
RP	0	PB, REC, CUE REV and PAUSE position. The pinch roller is pressed and the tension regulator is turned ON.
TURN	8	The position which is used to move the swing gear from S to T or from T to S.Normal STOP position.
STOP	C	The pinch roller is detached, tension regulator is turned OFF, and both reels are braked. Mechanism does not move any more in the loading direction.

5. Bit value discrimination

Bit values must be discriminated using the display data of the adjustment remote commander for the following items. Us the table below to discriminate if the bit value is "1" or "0".


Display on the adjustment remote commander
0:00:00
Address
Page
bit3 to bit0 discrimination
bit7 to bit4 discrimination

(Example) If the remote commander display is "8E", bit value from bit 7 to bit 4 can be discriminated from the column Ⓐ, and those from bit 3 to bit 0 from column Ⓑ.

	Display on the Adjustment Remote Commander	Bit value			
		bit3 or bit7	bit2 or bit6	bit1 or bit5	bit0 or bit4
	0	0	0	0	0
	1	0	0	0	1
	2	0	0	1	0
	3	0	0	1	1
	4	0	1	0	0
	5	0	1	0	1
	6	0	1	1	0
	7	0	1	1	1
Ⓐ	8	1	0	0	0
	9	1	0	0	1
	A(A)	1	0	1	0
	B(b)	1	0	1	1
	C(C)	1	1	0	0
	D(d)	1	1	0	1
Ⓑ	E(E)	1	1	1	0
	F(F)	1	1	1	1

6. Initializing the emergency code area

(Caution) Perform the initializing operation only when the past emergency codes can be deleted.

Operating procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	11	00	After setting the data, press the PAUSE button.
3	6	01	4D	After setting the data, press the PAUSE button.
4	6	11	01	After setting the data, press the PAUSE button.
5	F	E4~EF	00	After setting the data, press the PAUSE button.
6	6	01	00	After setting the data, press the PAUSE button.
7	6	00	00	After setting the data, press the PAUSE button. (End)

7. LED check

Data	Operation
00	Normal
10	Tally LED lights.

Operating procedure:

Order	Page	Address	Date	Procedure
1				Turn CAM POWER ON.
2				Check LED.
3	2	00	00	After setting the data, press the PAUSE button.
4	2	A0	10	Tally LED light.

8. Key input check

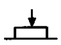
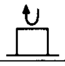
Bit	Key Switch	Switch Condition
0	Date (+)	"1" =OFF "0" =ON
1	Time	
2	Cassette eject	
3	Video power supply	
4	CC DOWN	
5	Start/Stop	
6	Camera power supply	

Operating procedure:

Order	Page	Address	Data	Procedure
1	2	00	3F	After setting the data, press the PAUSE button.
2	2	01		ON/OFF of each key switch can be known by discriminating the bit value of each display data.

9. Key input check (A/D port)

- CF-42 board

Address \ Display data	00~20	21~60	61~A0	A1~E0	E1~FF
2E (KEY AD0: IC303 (82))	• STOP (S307)	• REW (S305)	• FF (S306)	• PAUSE (S304)	No key input
2F (KEY AD1: IC303 (83))	• PB (S303)	• EDIT SEARCH (−) (S302)	• EDIT SEARCH (+) (S301)		No key input
30 (KEY AD2: IC303 (84))	COUNTER RESET (CF-42 board S482)	TITLE (CF-42 board S301)	DISPLAY (CF-42 board S302)	END SEARCH (CF-42 board S303)	No key input
31 (S/S MODE SW: IC303 (85))	START/STOP MODE (CF-42 BOARD : S485)				
	5 SEC				
32 (PROGRAM AE: IC303 (86))	PROGRAM AE (CF-42 BOARD : S489)				
		AE SPORTS	AE HIGH-SPEED SHUTTER	AE TWILIGHT	AE AUTO

Operating procedure:

Order	Page	Address	Data	Procedure
1	2	00	01	After setting the data, press the PAUSE button.
2	2	2E-32		Pushed key switch can be known by discriminating the data of each address.

Operating procedure:

Order	Page	Address	Data	Procedure
1	2	00	01	After setting the data, press the PAUSE button.
2	2	2E~32		From the display data of each address, it can be known which key is being pressed.

10.Individual operation of drum, capstan and loading motor

Data	Operation
00	Normal
02	Drum rotation in normal direction
06	Capstan rotation in normal direction
08	Capstan rotation in reverse direction
0A	Loading motor rotation in normal direction
0C	Loading motor rotation in reverse direction
01	All motors stop.
03	
05	
07	
09	
0B	
0D	
0F	

Operating procedure:

Order	Page	Address	Data	Procedure
1	7	00	02	After setting the data, press the PAUSE button.
2	7	0E	01	Individual operation of motors is approved.
3	7	11		Motor can be operated individually by setting the above described data.
4				Turn the main power (7.2 V) OFF.

3-4. SERVO SYSTEM ADJUSTMENTS

1. SYNC level and BURST level adjustments

Purpose: Adjust the sync and burst level of the camera output to the specified values.

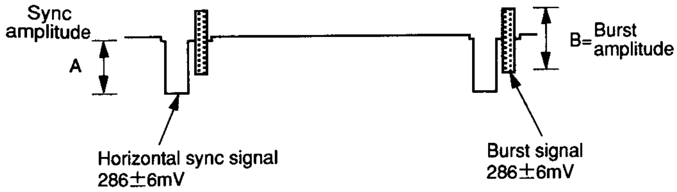
Adjustment error: The playback machine can lose lock of the servo systems if the sync level is too low. The playback color will become too thick if the burst level is low.

( ) : CCD-TRV11E/TRV21E

Mode	Camera record
Subject	Color bar chart: standard picture frame
Measurement point	VIDEO output terminal (terminated in 75Ω)
Measuring equipment	Oscilloscope
Adjustment page	F
Adjustment address	28 (SYNC LEVEL) 29 (BURST LEVEL)
Specifications	A = 286 ±6 mV (300±6mV) (SYNC LEVEL) B = 286 ±6 mV (300±6mV) (BURST LEVEL)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	01	03	After setting the data, press the PAUSE button.
3	F	28		Change the data using the PLAY and STOP buttons until the SYNC LEVEL (A) satisfies the specification.
4				Press the PAUSE button.
5	F	29		Change the data using the PLAY and STOP buttons until the BURST LEVEL (B) satisfies the specification.
6				Press the PAUSE button.
7	6	01	00	After setting the data, press the PAUSE button.
8	6	00	00	After setting the data, press the PAUSE button. (End)



2. Switching position adjustment

Purpose: Removes vertical mechanical error of head assembling.

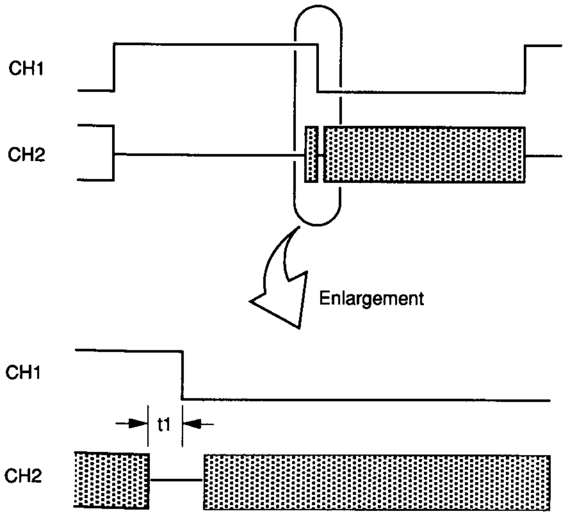
Adjustment error: Skew picture.

Mode	Playback
Signal	Alignment tape : For adjustment tracking (WR5-1CP/1NP)*
Measurement Point	CH1 : ⑧ of CN102 (RF SWP) CH2 : ① of CN102 (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	0A 0B
Specification Value	t1= 0 ± 10 μ sec

* WR5-1NP : NTSC (CCD-TRV11/TRV21)
WR5-1CP : PAL (CCD-TRV11E/TRV21E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	0B	80	Initial setting.
3	F	0B		Change the data with the PLAY and STOP buttons, and minimize t1.
4				Press the PAUSE button.
5	F	0A		Change the data with the PLAY and STOP buttons, and minimize t1.
6				Press the PAUSE button.
7				Check that tl satisfies the specified value. If not, repeat steps 3 to 6 in order.
8	6	00	00	After setting the data, press the PAUSE button. (End)

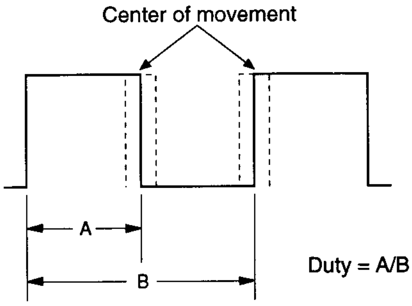


3. Capstan FG offset adjustment

Purpose: Adjusts duty ratio of capstan FG signal

Adjustment error: Jitter can increase.

Mode	CAM-REC (SP)
Signal	Any signal
Measurement Point	CN102 pin⑨
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	12
Specification Value	Duty = 50 ± 1.5%



Duty = A/B x 100 [%]

Adjustment procedure:

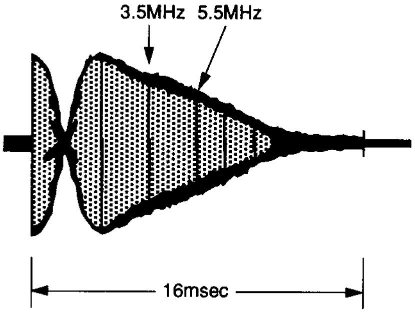
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	12	80	After setting the data, press the PAUSE button.
3	F	12		Change data using PLAY and STOP buttons so that the duty ratio A/B satisfies the specification.
4				Press the PAUSE button.
5	6	00	00	After setting the data, press the PAUSE button. (End)

3-5. PLAYBACK FREQUENCY RESPONSE CHARACTERISTICS ADJUSTMENT

Purpose: Remove variation of picture quality between heads due to difference of characteristics.

Adjustment error: Flicker or over-modulation of playback picture.

Mode	Playback
Signal	Alignment tape: Normal mode frequency response characteristics adjustment (WR5-6C/6N)*
Measurement Point	Check connector (CH1: CN102 pin① (PB RF)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	22 23
Specification Value	3.5 MHz level : 5.5 MHz level = 4 : (3.0 ±0.2)



* WR5-6N : NTSC (CCD-TRV11/TRV21)
WR5-6C : PAL (CCD-TRV11E/TRV21E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	22		Change data using PLAY and STOP buttons to adjust the level ration between 3.5 MHz level and 5.5 MHz level of the PB RF waveform of channel "1a" satisfies the specification. Press the PAUSE button. Playback mode.
3	F	23		Adjust the channel "2a" in the same way (address 23). Press the PAUSE button. Playback mode.
4	6	00	00	After setting the data, press the PAUSE button. (End)

3-6. DEMD OUT LEVEL ADJUSTMENT

Purpose: The playback video level is kept to constant level.

Adjustment error: The playback picture can be brighter or darker than normal picture.

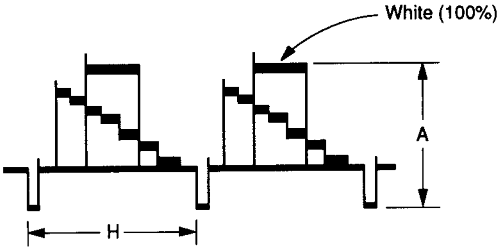
Mode	Playback
Signal	Alignment tape : Normal mode (WR5-5CSP/5NSP)*
Measurement Point	IC201 pin⑳ or CN102 pin⑥
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	1D
Specification Value	A=0.50±0.01Vp-p

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	1D		Change data using PLAY and STOP buttons so that the Y signal level (A) satisfies the specification.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

NTSC (CCD-TRV11/TRV21)



PAL (CCD-TRV11E/TRV21E)

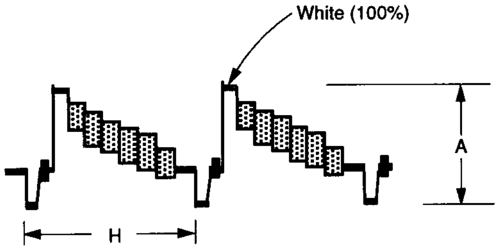


Fig. 6-3-1

3-7. YD OUT LEVEL ADJUSTMENT

Purpose: Minimizes the residual chroma component of Y comb filter output signal.

Adjustment error: Chroma flicker at video out (pin jack) of VTR overall characteristics. Color variations also significant.

Mode	Playback
Signal	Alignment tape : Normal mode (WR5-5CSP/5NSP)*
Measurement Point	CN102 pin⑤
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	24
Specification Value	A=0.50±0.01Vp-p

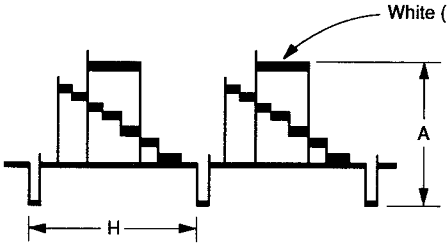
* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

Note : Minimize the residual chroma to the smallest amplitude

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	24		Change data using PLAY and STOP buttons so that the Y signal level (A) satisfies the specification.
3				Press the PAUSE button.
4	1	00	00	After setting the data, press the PAUSE button. (End)

NTSC (CCD-TRV11/TRV21)



PAL (CCD-TRV11E/TRV21E)

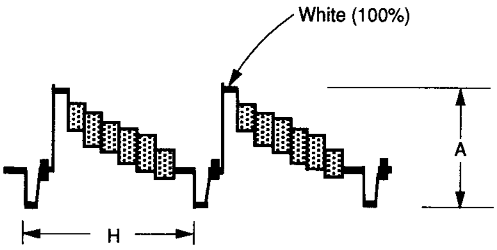


Fig. 6-3-2

Related Adjustments:

"Emphasis input level adjustment", "PB Y level adjustment", "Y FM carrier frequency adjustment"

3-8. PB CHROMA LEVEL CHECK

Purpose: The playback chroma level is kept to constant level.

Adjustment error: Color of playback picture can be thinner or thicker than normal picture.

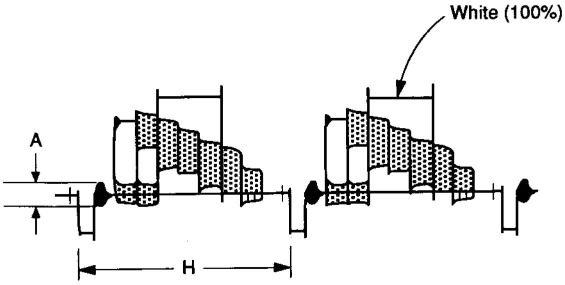
Mode	Playback
Signal	Alignment tape: color bar segment of operation check tape • Normal mode WR5-5CSP/5NSP*
Measurement Point	CN102 pin⑥
Measuring Instrument	Oscilloscope
Adjustment Page	
Adjustment Address	
Specification Value	A=150±15mVp-p (BURST LEVEL)

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

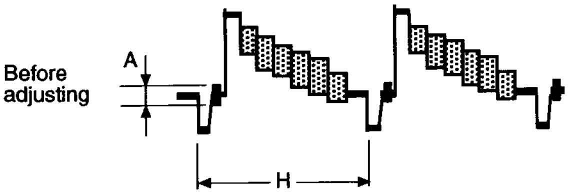
Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Playback the color bar segment of the normal mode alignment tape (WR5-5CSP/5NSP)*.
2				Check that the burst signal level satisfies the specification.

NTSC (CCD-TRV11/TRV21)



PAL (CCD-TRV11E/TRV21E)



3-9. PB Y OUT LEVEL ADJUSTMENT

Purpose: Adjusts playback video level for the specification value.

Adjustment error: Playback picture can be too brighter or too darker than normal picture.

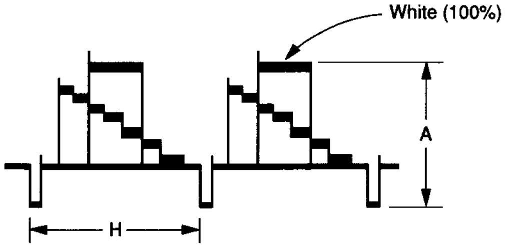
Mode	Playback
Signal	Alignment tape: color bar segment of operation check tape • Normal mode WR5-5CSP/5NSP*
Measurement Point	VIDEO output terminal (terminated in 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	1B
Specification Value	A=1.00±0.05Vp-p

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

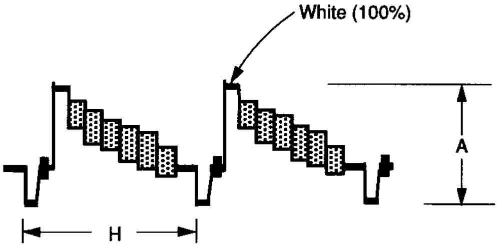
Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2				Playback the color bar segment of the normal alignment tape (WR5-5CSP/5NSP)*
3	F	1B		Change data using PLAY and STOP buttons so that the playback signal level (A) satisfies the specification.
4				Press the PAUSE button.
5	6	00	00	After setting the data, press the PAUSE button. (End)

NTSC (CCD-TRV11/TRV21)



PAL (CCD-TRV11E/TRV21E)



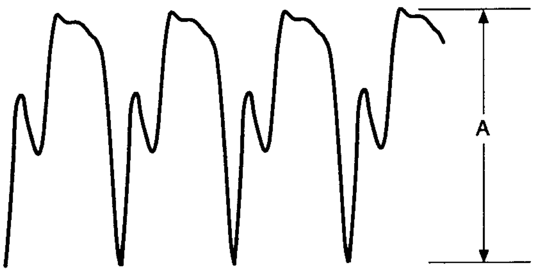
3-10. FE OSC CHECK

Purpose:	Check the oscillating frequency and level of the flying erase (FE) signal.
Adjustment error:	If REC-PAUSE recording is repeated, unerased area is left in the junctions between the editings which results in increase of noise or previous picture can be seen.

Mode	CAM-REC
Signal	Any signal
Measurement Point	CN101 pin ⑪
Measuring Instrument	Oscilloscope and frequency counter
Adjustment Page	
Adjustment Address	
Specification Value	A=7.0Vp-p or more (MP mode) f=7.2±0.5MHz (MP mode)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Insert a normal MP type tape.
2				Make a recording.
3				Check that the FE signal level satisfies the specification.
4				Check that the FE signal frequency satisfies the specification.



f=7.2±0.5MHz

3-11. EMPHASIS INPUT LEVEL ADJUSTMENT

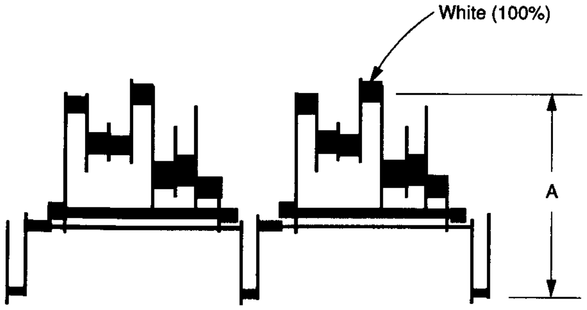
Purpose: Adjusts the record emphasis characteristics to the specification value.

Adjustment error: Luminance signal smear, blurred picture, too much emphasized edge of overall video characteristics.

Mode	CAM-REC
Signal	Color bar chart
Measurement Point	· CN102 PIN④ · VIDEO output terminal (terminated in 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	1A
Specification Value	A=(Vo×0.96×500) mVp-p±2%

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	01	47	After setting the data, press the PAUSE button.
3				Measure amplitude of the VIDEO OUT. The measured value is "Vo"[V].
4	F	1A		Change data using PLAY and STOP buttons so that the Y signal level at CN102 pin④ (A) satisfies the specification.
5				Press the PAUSE button.
6	6	01	00	After setting the data, press the PAUSE button.
7	6	00	00	After setting the data, press the PAUSE button. (End)

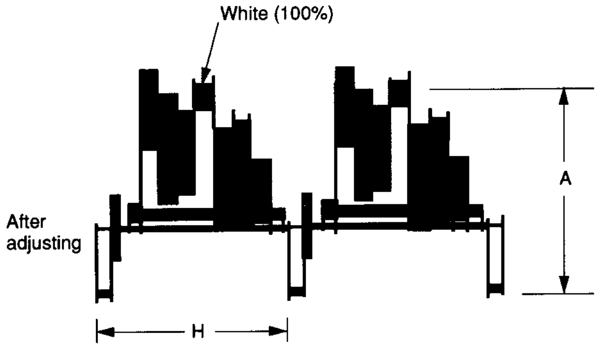


3-12. Y FM DEVIATION ADJUSTMENT

Purpose: Adjusts the FM signal to be recorded on tape to the 8 mm format. (Adjusts the frequency deviation of normal mode Y FM signal.)

Adjustment error: Too bright or too dark overall picture. Overmodulation picture. (If deviation is too wide,or too narrow.)

Mode	CAM-REC and playback
Signal	Color bar chart
Measurement Point	· CN102 pin② · VIDEO output terminal (terminated in 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	17
Specification Value	A=(Vo×0.96)Vp-p±2%



Related Adjustments:
"Normal mode Y FM deviation adjustment"

Note : The "Emphasis input level adjustment", "PB Y level adjustment", must have already been completed.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Insert a normal MP type tape.
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3	6	01	47	After setting the data, press the PAUSE button.
4				Shoot and record the color bar chart. The video out level at that setup is "Vo".
5				Playback the recorded signal.
6				Compare the playback signal level (A) with the specification value. If the specification value is satisfied, the adjustment is complete.
7	F	17		If the specification value is not satisfied, change data using PLAY and STOP buttons. • If the playback signal level is bigger than the specification value, decrease the data. • If the playback signal level is smaller than the specification value, increase the data.
8				Press the PAUSE button.
9				Return to step 4.
10	6	01	00	After setting the data, press the PAUSE button.
11	6	00	00	After setting the data, press the PAUSE button. (End)

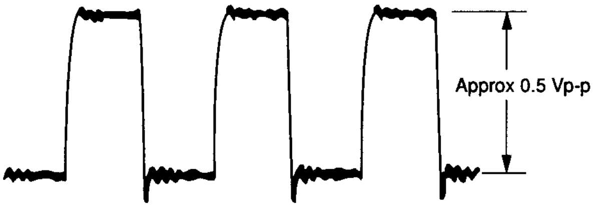
3-13. Y FM CARRIER FREQUENCY ADJUSTMENT

Purpose:	Adjusts the FM signal to be recorded on tape to the 8 mm format. (Adjusts the carrier frequency of normal mode Y FM signal.)
Adjustment error:	(If frequency is low) Overall picture will be blurred signal. (If frequency is high) Overall picture will have black streaking noise. S/N will be deteriorated.

Mode	CAM-REC
Signal	Any signal
Measurement Point	IC201 pin(41)
Measuring Instrument	Frequency counter, Oscilloscope
Adjustment Page	F
Adjustment Address	19
Specification Value	4.20±0.01MHz

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	01	43	After setting the data, press the PAUSE button.
3	F	19		Change data using PLAY and STOP buttons so that the Y signal level (A) satisfies the specification. (Record mode)
4				Press the PAUSE button.
5	6	01	00	After setting the data, press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)



4.20 ± 0.01MHz

3-14. CHROMA EMPHASIS fo ADJUSTMENT

Purpose: Adjust fo of the chroma emphasis to the specified frequency range.

Adjustment error: The bust and chroma level becomes too big during playback.

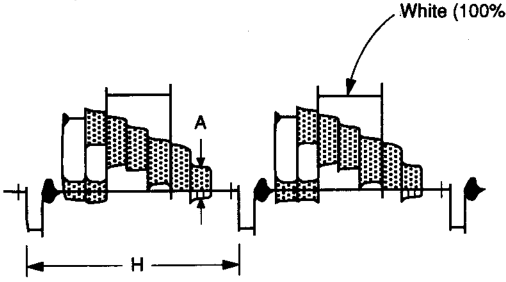
Mode	Playback
Signal	Color bar signal (WR5-5CSP/5NSP)*
Measurement Point	IC201 pin ㉑
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	1E
Specification Value	Minimizes the chroma component (A in the following diagram)

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

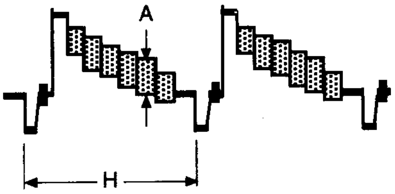
Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	1E		Change data so that the chroma component (A) is minimized.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

NTSC (CCD-TRV11/TRV21)



PAL (CCD-TRV11E/TRV21E)



3-15. REC Y LEVEL ADJUSTMENT

Purpose: Maintains a constant level of Y FM, chroma AFM and ATF signals when recording on tape.

Adjustment error: (If level is low) Poor S/N of playback picture
(If level is high) Black streaking noise appears.

Connection: Connect CN102 pin⑧ (RF SWP) to GND.

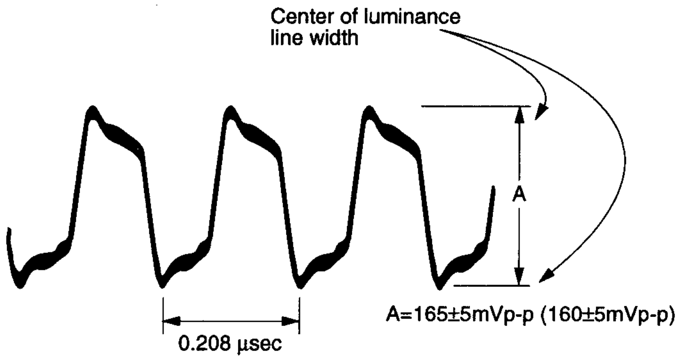
( ) : CCD-TRV11E/TRV21E

Mode	CAM-REC (SP)
Signal	No signal
Measurement Point	CN102 pin② (check connector)
Measuring Instrument	Oscilloscope (Note)
Adjustment Page	F
Adjustment Address	1F
Specification Value	A=165±5mVp-p (160±5mVp-p)

Note : Use the MP type tape. If an oscilloscope has the bandwidth limiting switch, set to on position.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2				Insert the MP tape to establish record mode.
3	6	01	43	After setting the data, press the PAUSE button.
4	F	1F		Change data using PLAY and STOP buttons so that the REC Y RF level (A) satisfies the specification.
5				Press the PAUSE button.
6	6	01	00	After setting the data, press the PAUSE button.
7	6	00	00	After setting the data, press the PAUSE button. (End)



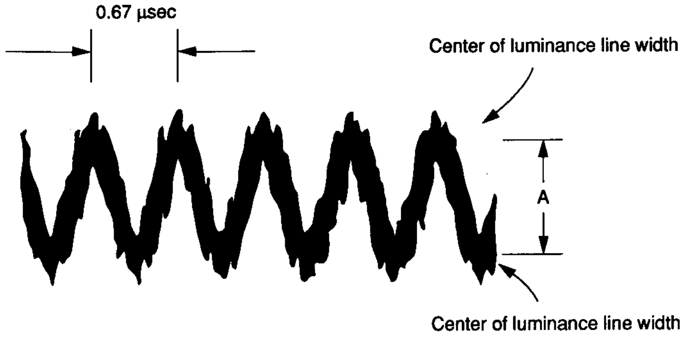
3-16. REC L LEVEL ADJUSTMENT

Purpose:	Maintains a constant level of chroma, AFM and ATF signals when recording on tape.
Adjustment error:	If level is low, audio distortion increases, ATF servo loses lock, and chroma S/N deteriorates. If level is high, Y S/N deteriorates and white streaking noise appears.

Mode	CAM-REC (SP)
Signal	No signal
Measurement Point	CN102 pin② (check connector)
Measuring Instrument	Oscilloscope Frequency bandwidth limitation: 20 MHz OFF
Adjustment Page	F
Adjustment Address	21
Specification Value	A=8.494±0.3mV (AFM Level)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	6	01	43	After setting the data, press the PAUSE button.
3	F	21		Change data using PLAY and STOP buttons so that the AFM signal level (A) satisfies the specification.
4				Press the PAUSE button.
5	6	01	00	After setting the data, press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)


0.67 μsec
Center of luminance line width
A
Center of luminance line width

3-17. REC C LEVEL ADJUSTMENT

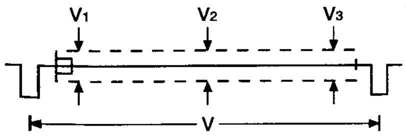
Purpose:	Maintains a constant chroma level when recording on tape.
Adjustment error:	If level is low, overall S/N deteriorates. If level is high, S/N of Y signal at deep color deteriorates and white streaking noise appears.

[ ] : CCD-TRV11E/TRV21E

Mode	CAM-REC
Signal	White pattern (See page 6-2)
Measurement Point	· CN102 pin② (Check connector) · VIDEO output terminal (terminated in 75Ω)
Measuring Instrument	Oscilloscope
Adjustment Page	F
Adjustment Address	20
Specification Value	$A=\left(33.8\times\frac{\overline{Vo}}{714}\right)$mVp-p ±2mVp-p $\left[A=\left(28.5\times\frac{\overline{Vo}}{700}\right)\text{mVp-p}\pm 2\text{mVp-p}\right]$

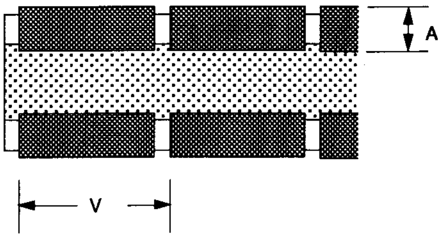
Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Shoot the all white pattern to the full picture frame.
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3	6	01	45	After setting the data, press the PAUSE button.
4				Measure the chroma output level of the VIDEO OUT connector. Obtain the average value of three points (beginning, middle, end) of a vertical period. Call the average value $\overline{Vo}$ (mV).
5	F	20		Change data using PLAY and STOP buttons so that the REC signal at CN102 pin② amplitude (A) satisfies the specification.
6				Press the PAUSE button.
7	6	01	00	After setting the data, press the PAUSE button.
8	6	00	00	After setting the data, press the PAUSE button. (End)



VIDEO OUT Signal

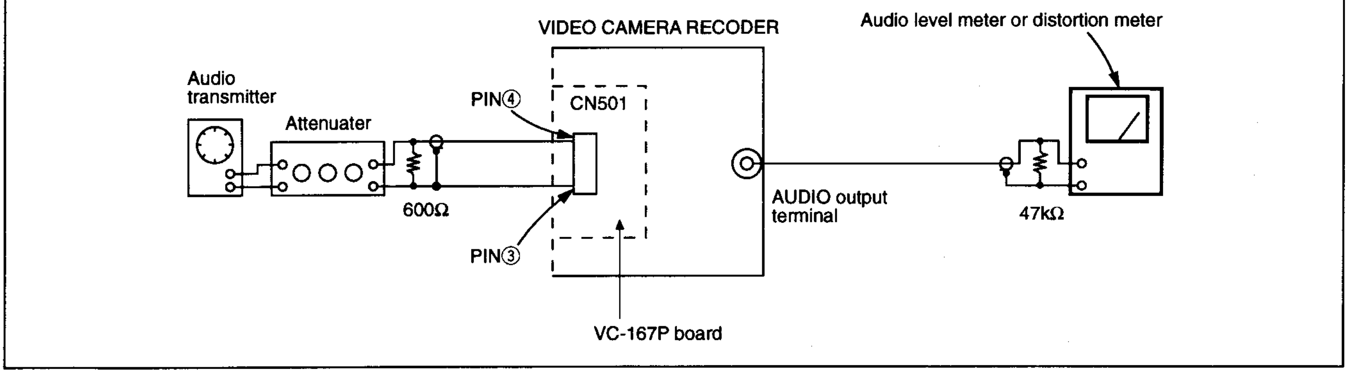
$$\overline{Vo}=\left(\frac{V_1+V_2+V_3}{3}\right)$$



6-4. AUDIO SYSTEM ADJUSTMENT

- Use the alignment tape (WR5-5CSP/5NSP)* for audio system adjustment.
- Connect an audio input signal from VC-167 board CN501 as shown in Fig.6-4-1.

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)



VIDEO CAMERA RECODER
Audio level meter or distortion meter
Audio transmitter
Attenuater
PIN④
CN501
600Ω
PIN③
AUDIO output terminal
47kΩ
VC-167P board

Fig.6-4-1

4-1. EE-OUTPUT LEVEL CHECK

Mode	Record
signal	CN501 PIN ④ INPUT 400 Hz, −38 dBs
	Audio input from CN501 pin④
Measurement Point	AUDIO output terminal (no load)
Measuring Instrument	Audio level meter
Specification Value	−7.5 ±2.0 dBs

Check procedure

Order	Procedure
1	Check that 400 Hz signal level satisfies the specification.

4-2. 1.5MHz DEVIATION ADJUSTMENT

Purpose: 1.5MHz deviation adjustment. Error in this adjustment value means loss of tape inter change ability.

Mode	Playback
Signal	Alignment tape : For checking operations (WR5-5CSP/5NSP)*
Measurement	AUDIO output terminal.
Measuring Instrument	Oscilloscope, level meter
Adjustment Page	F
Adjustment Address	13
Specified Value	−7.5±0.5dBs

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

Adjustment method:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	13		Change the data with the PLAY and STOP buttons, and adjust the 400Hz signal level to specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

4-3. BPF fo ADJUSTMENT

Purpose:	Optimizes fo of BPF inside IC.
Adjustment error:	Incorrect discrimination of monaural/stereo and increase of noise at high output of audio volume are resulted.

Mode	Playback
Signal	Alignment tape: (WR5-5CSP/5NSP)*
Measurement Point	AUDIO output terminal
Measuring Instrument	Distortion meter
Adjustment Page	F
Adjustment Address	15
Specification Value	Distortion : 1% or less.

* WR5-5NSP : NTSC (CCD-TRV11/TRV21)
WR5-5CSP : PAL (CCD-TRV11E/TRV21E)

Adjustment procedure:

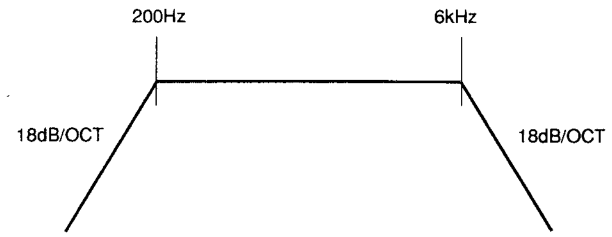
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2				Playback the 400 Hz segment of the WR5-5CSP/5NSP* alignment tape.
3	F	15		Change data using PLAY and STOP buttons so that distortion factor is minimized.
4				Press the PAUSE button.
5	6	00	00	After setting the data, press the PAUSE button. (End)

4-4. OVERALL SIGNAL LEVEL AND DISTORTION CHECK

Purpose: Checks distortion level.

Mode	CAM-REC and playback
Signal	400 Hz, -38 dBs
Measurement Point	AUDIO output terminal
Measuring Instrument	Audio level meter and distortion meter
Specification Value	Level: −7.5±2.0dBs Distortion 0.8% or less (Note)

Note: The value when band-pass filter of 200 Hz to 6 kHz is used.



Check procedure:

Order	Procedure
1	Input 400 Hz, -38 dBs signal to, CN501 pin ④.
2	Record the signal. (CAM-REC)
3	Remove the input signal and playback the recorded segment.
4	Confirm that 400 Hz signal level at audio output terminal is -7.5 ±2 dBs and distortion is 0.8% or less. (Note)

4-5. OVERALL NOISE LEVEL CHECK

Purpose: Checks noise level.

Mode	CAM-REC and playback
Signal	No signal: VC-167 board CN501 (Note)
Measurement Point	AUDIO output terminal
Measuring Instrument	Audio level meter (using IHF-A curve weighting filter)
Specification Value	−65 dBs or less

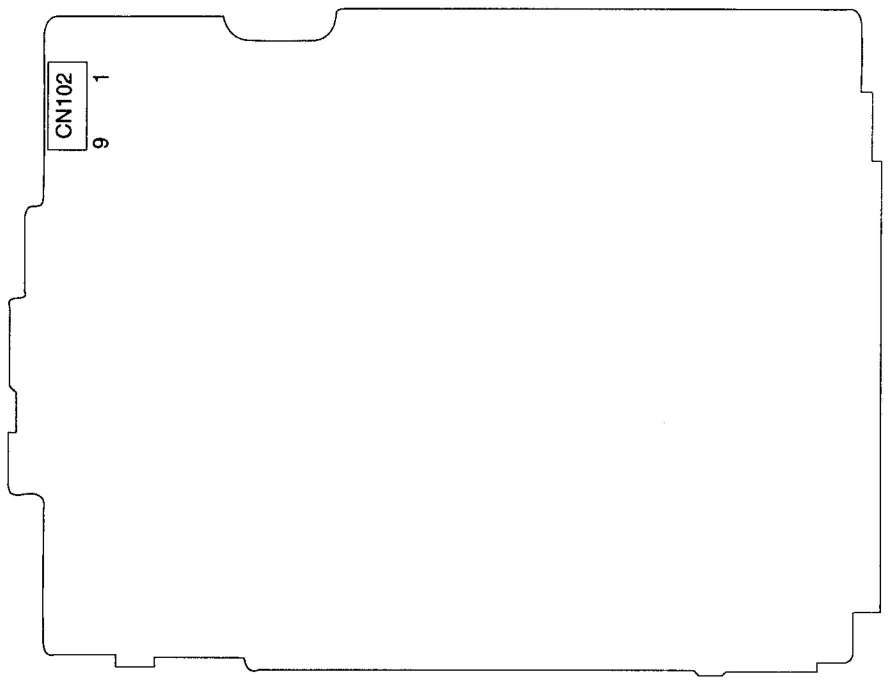
Note: Before making short circuit between CN501 pins③ and ④, remove the flexible board from CN501

Check procedure:

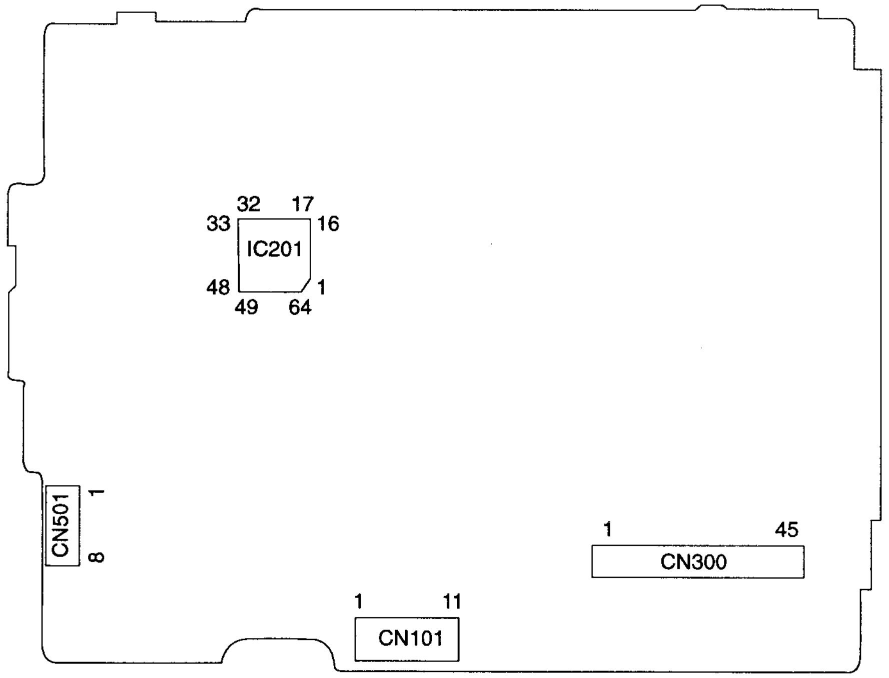
Order	Procedure
1	Insert a shorting to pin③ and pin④ as CN501.
2	Make recording.
3	Remove the shorting plug.
4	Playback the recorded segment.
5	Confirm that the noise level at audio input terminal is −65 dBs or less.

ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

VC-167 BOARD (SIDE A)



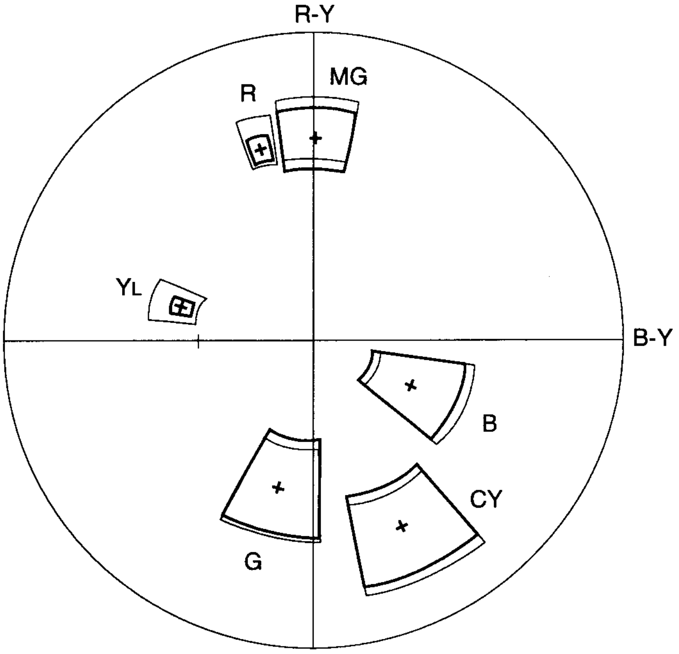
VC-167 BOARD (SIDE B)



FOR CAMERA COLOR REPRODUCTION ADJUSTMENT (CCD-TRV11 MODEL) (NTSC)

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

⊞ : WEIGHT OFF MODE
☐ : WEIGHT ON MODE

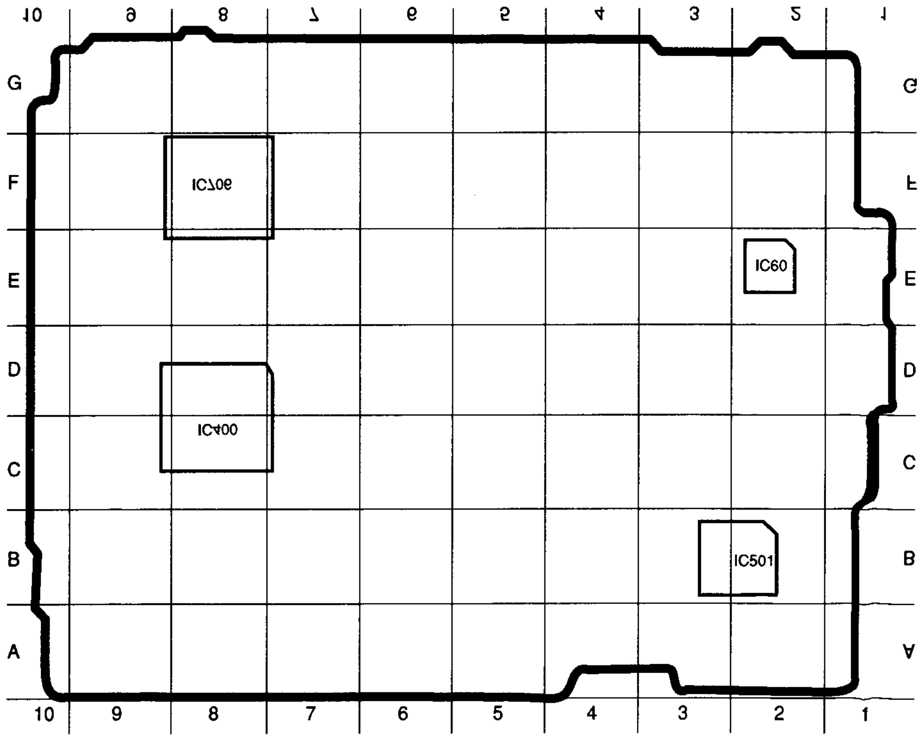

R-Y
B-Y
R
MG
YL
B
CY
G

CCD-TRV11

〈PARTS REFERENCE SHEET〉

You can find the parts position of mount locations applying to VC-167 board of a set.

VC-167 CCD-TRV11 SIDE A

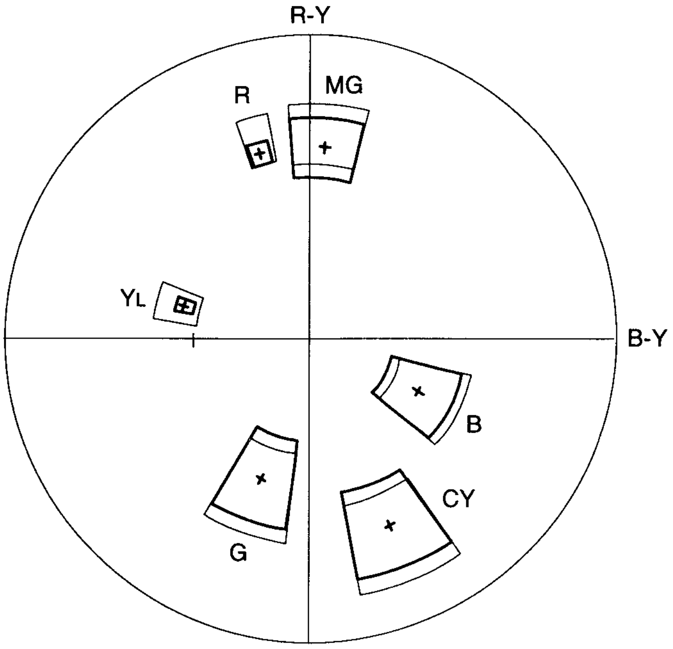

10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC60
IC400
IC501

SIDE B CCD-TRV11 VC-167

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT (CCD-TRV21 MODEL) (NTSC)

⊞ : WEIGHT OFF MODE
☐ : WEIGHT ON MODE

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.

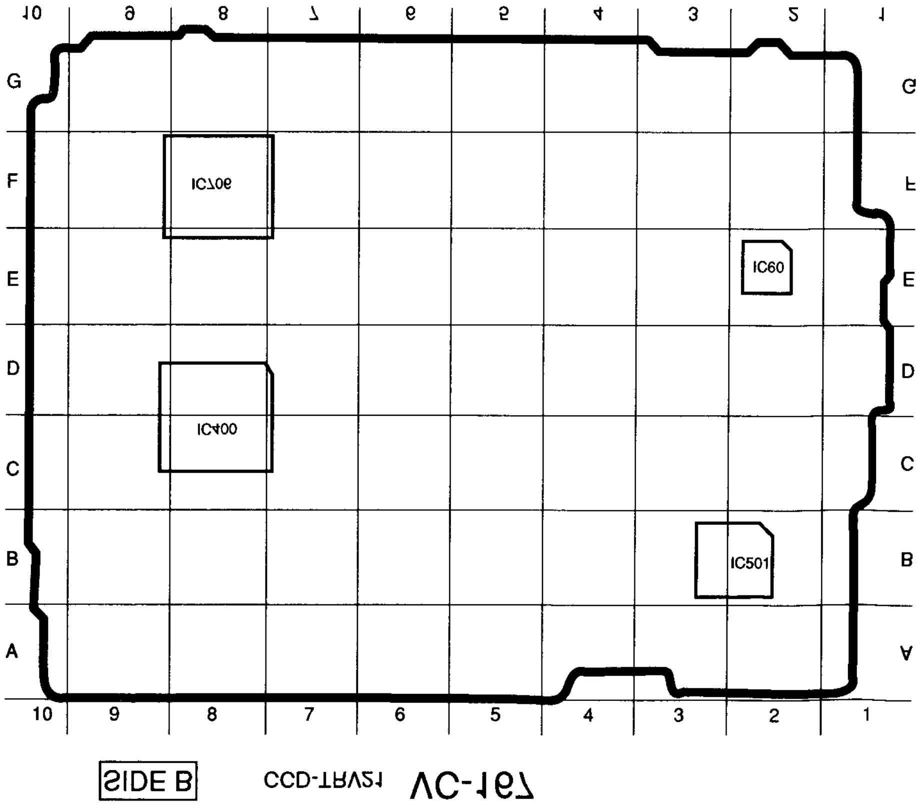

R-Y
R
MG
YL
B-Y
B
CY
G

CCD-TRV21

〈PARTS REFERENCE SHEET〉

You can find the parts position of mount locations applying to VC-167 board of a set.

VC-167 CCD-TRV21 **SIDE A**

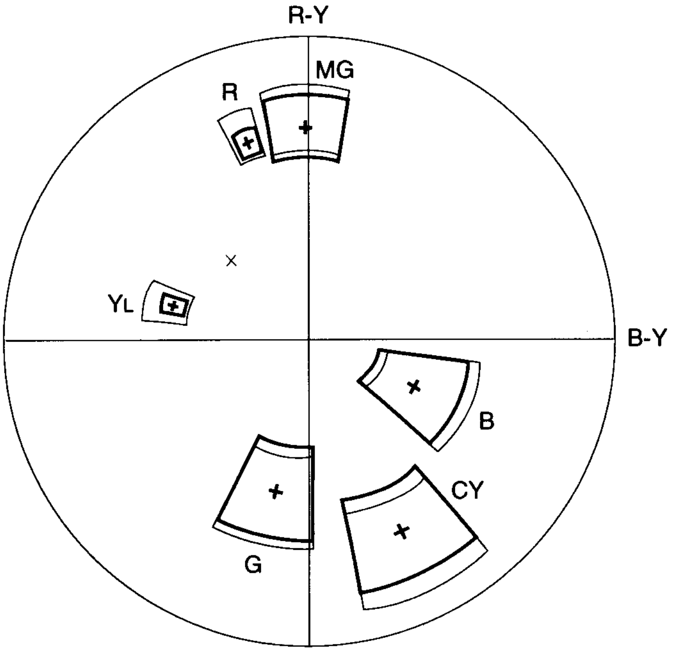

10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC60
IC400
IC501
SIDE B
CCD-TRV21
VC-167

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT (CCD-TRV11E MODEL) (PAL)

⊞ : WEIGHT OFF MODE

☐ : WEIGHT ON MODE

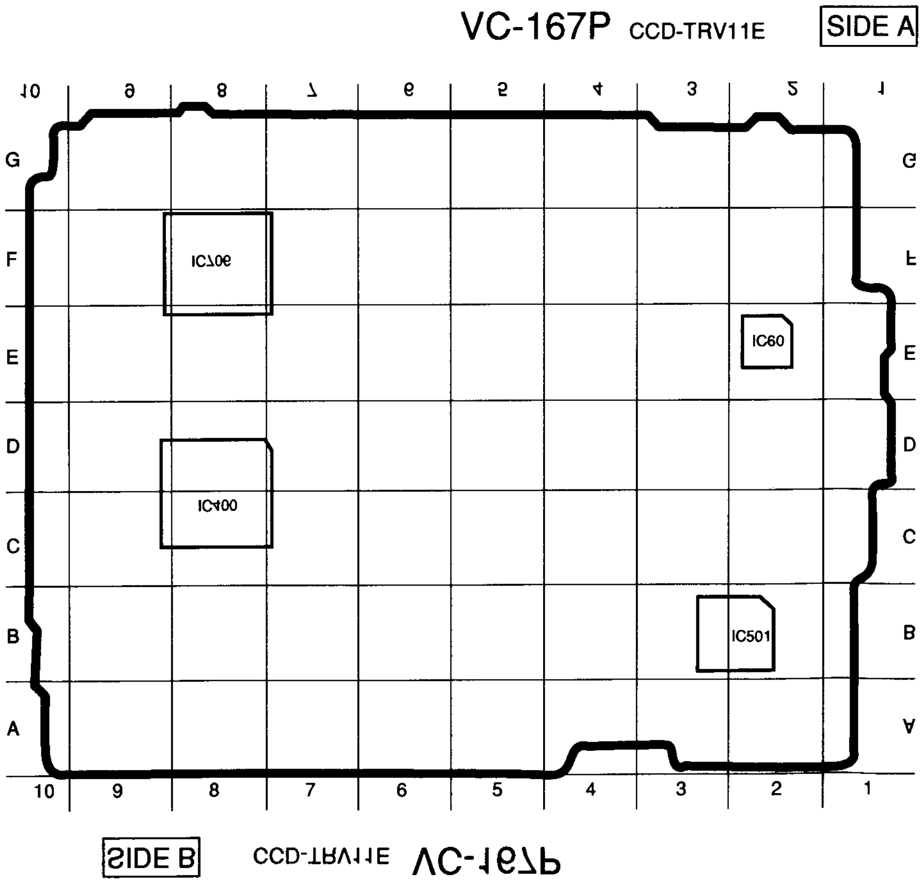
Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.


R-Y
MG
R
YL
B-Y
B
CY
G

CCD-TRV11E

〈PARTS REFERENCE SHEET〉

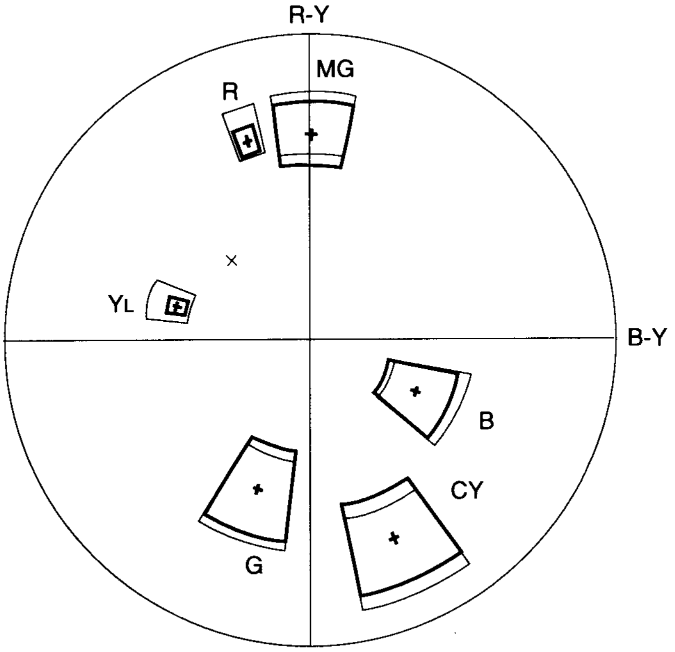
You can find the parts position of mount locations applying to VC-167P board of a set.


VC-167P CCD-TRV11E
SIDE A
10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC60
IC400
IC501
SIDE B
CCD-TRV11E
VC-167P

FOR CAMERA COLOR REPRODUCTION ADJUSTMENT (CCD-TRV21E MODEL) (PAL)

⊞ : WEIGHT OFF MODE
☐ : WEIGHT ON MODE

Take a copy of CAMERA COLOR REPRODUCTION FRAME and Parts reference sheets with a clear sheet for use.


R-Y
MG
R
YL
B-Y
B
CY
G

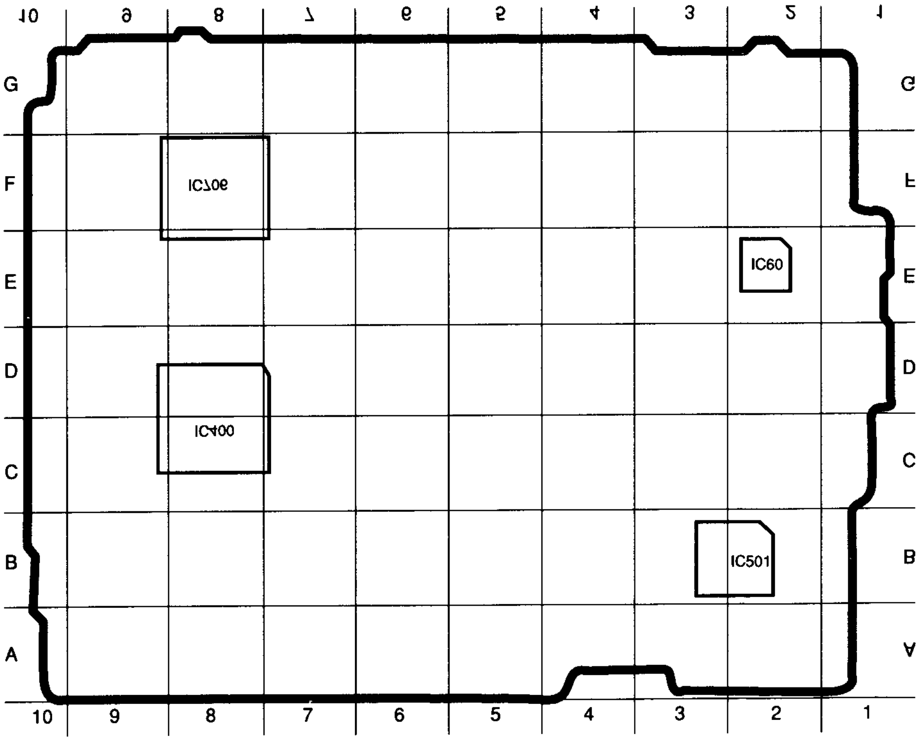
CCD-TRV21E

✂

〈PARTS REFERENCE SHEET〉

You can find the parts position of mount locations applying to VC-167P board of a set.

VC-167P CCD-TRV21E **SIDE A**


10
9
8
7
6
5
4
3
2
1
G
F
E
D
C
B
A
IC706
IC60
IC400
IC501

SIDE B CCD-TRV21E VC-167P

✂

CCD-TRV11/TRV11E/
TRV21/TRV21E/TRV21PK
RMT-713

SONY®

SERVICE MANUAL

US Model
Canadian Model
CCD-TRV11/TRV21
AEP Model
UK Model
CCD-TRV11E/TRV21E
E Model
CCD-TRV11/TRV11E/TRV21/
TRV21E/TRV21PK
Australian Model
CCD-TRV11E
Hong Kong Model
CCD-TRV11/TRV11E
Tourist Model
CCD-TRV21/TRV21E

SUPPLEMENT-1

File this supplement with the Service Manual.
(EV-606032)

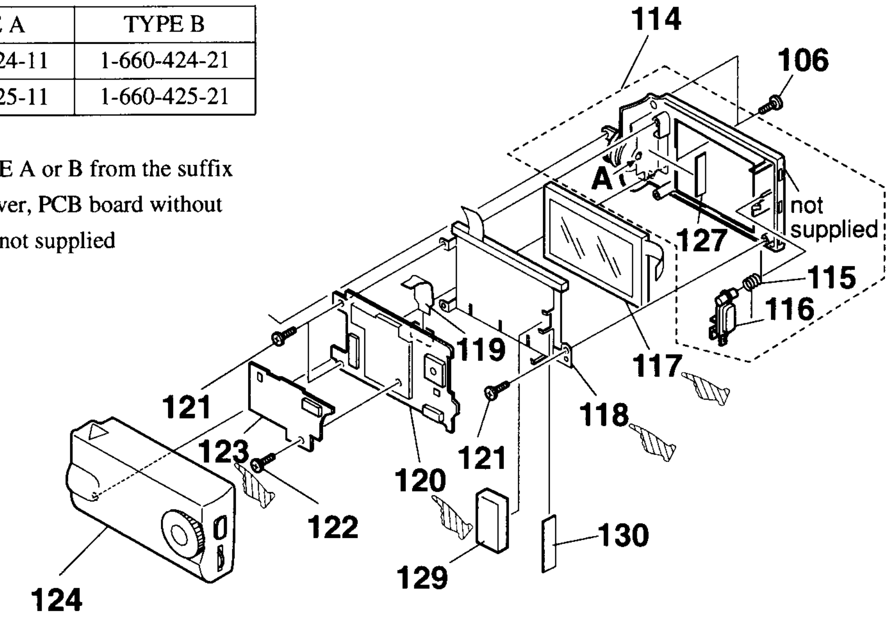
Addition of 2.5inch LCD specifications.

- Differences are shown as follows : Refer to Service Manual (9-973-869-11) for “TYPE A”. Refer to this Supplement-1 for “TYPE B”.

▨ : Indicates changed portion.

BOARD	TYPE A	TYPE B
PD-67	1-660-424-11	1-660-424-21
SD-21	1-660-425-11	1-660-425-21

* Identify either TYPE A or B from the suffix of the board. However, PCB board without parts (no mount) is not supplied



page	TYPE A			TYPE B		
5-3	117	1-801-191-11	INDICATOR MODULE, LIQUID CRYST	117	1-801-289-11	INDICATOR MODULE, LIQUID CRYST
	⚠118	1-517-524-11	TUBE, FLUORESCENT, COLD CATHODE	⚠118	1-517-524-21	TUBE, FLUORESCENT, COLD CATHODE
	120	A-7072-499-A	PD-67 BOARD, COMPLETE (TRV11/TRV21)	120	A-7072-858-A	PD-67 BOARD, COMPLETE (TRV11/TRV21)
	120	A-7072-525-A	PD-67P BOARD, COMPLETE (TRV11E/TRV21E)	120	A-7072-860-A	PD-67P BOARD, COMPLETE (TRV11E/TRV21E)
	123	A-7072-500-A	SD-21 BOARD, COMPLETE (TRV11/TRV21)	123	A-7072-859-A	SD-21 BOARD, COMPLETE (TRV11/TRV21)
	123	A-7072-526-A	SD-21P BOARD, COMPLETE (TRV11E/TRV21E)	123	A-7072-861-A	SD-21P BOARD, COMPLETE (TRV11E/TRV21E)

TABLE OF CONTENTS

LCD BLOCK DIAGRAM ··3

PD-67 (LCD) SCHEMATIC DIAGRAM ························6
PD-67 (LCD) PRINTED WIRING BOARD ······················9
SD-21 (R.G.B DECODER) SCHEMATIC DIAGRAM·········12
SD-21 (R.G.B DECODER) PRINTED WIRING BOARD ···15

ELECTRICAL PARTS LIST ····································17

21. LCD system adjustments (PD-67 board) ···············21
21-1. EVR initial data input ···································21
21-2. VCO adjustment ···22
21-3. Horizontal display position adjustment ················23
21-4. D RANGE adjustment ·····································24
21-5. CONTRAST adjustment····································25
21-6. BRIGHT adjustment ·······································26
21-7. V-COM level adjustment ·································27
21-8. COLOR adjustment···28
21-9. HUE adjustment (CCD-TRV11/TRV21) ···············29
21-10. BURST CLEANING adjustment
(CCD-TRV11E/TRV21E) ································29
21-11. V-COM adjustment···30
21-12. White balance adjustment ································31

The Instruction Manual in Korean language becomes available.

Ref. No.	Part No.	Description	Remarks
	3-856-152-71	MANUAL, INSTRUCTION (KOREAN)	(TRV21:Tourist)

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

**ATTENTION AU COMPOSANT AYANT RAPPORT
À LA SÉCURITÉ!**

LES COMPOSANTS IDENTIFÉS PAR UNE MARQUE ⚠ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈSES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPÉMENTS PUBLIÉS PAR SONY.

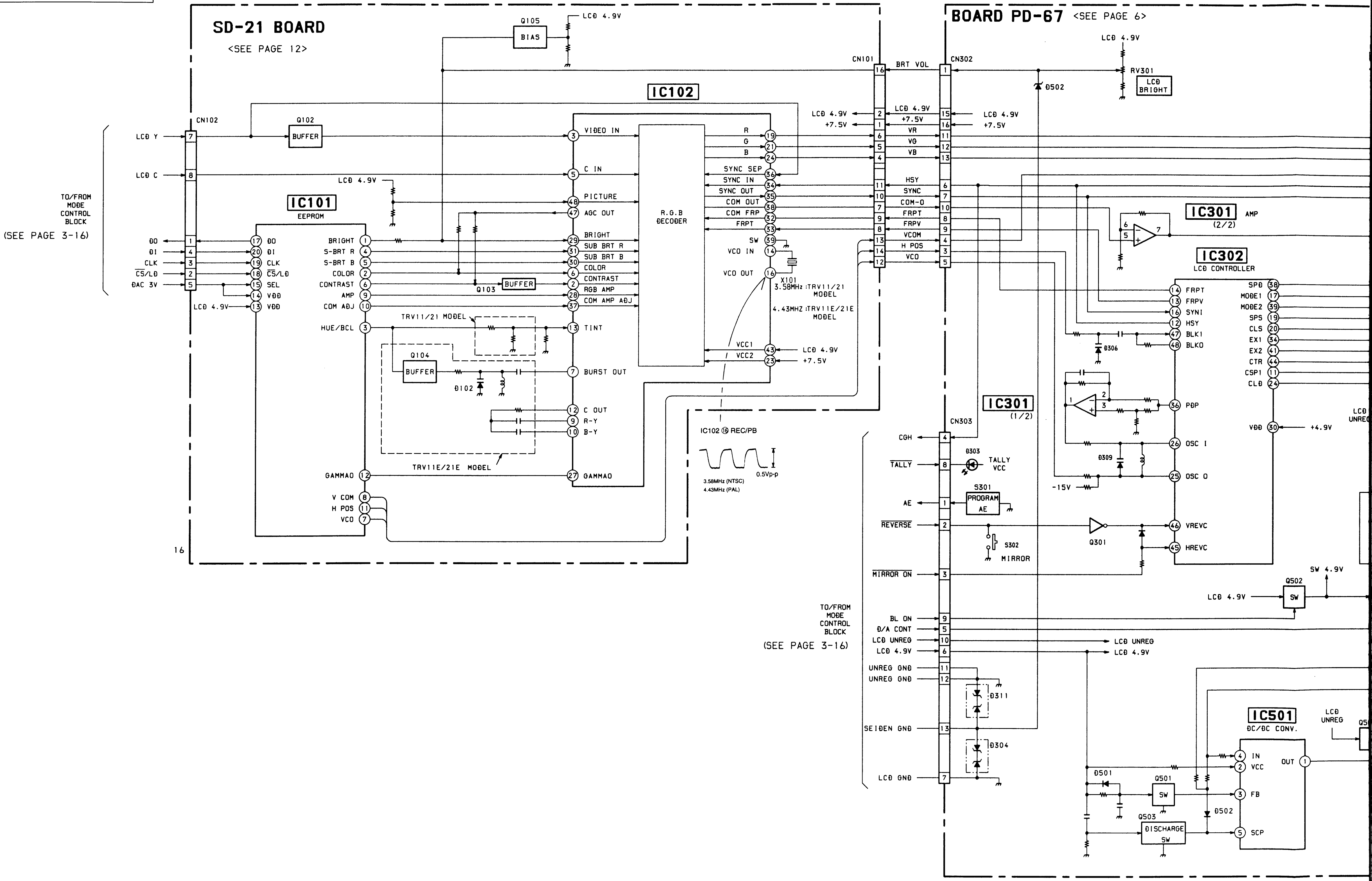
SAFETY CHECK-OUT

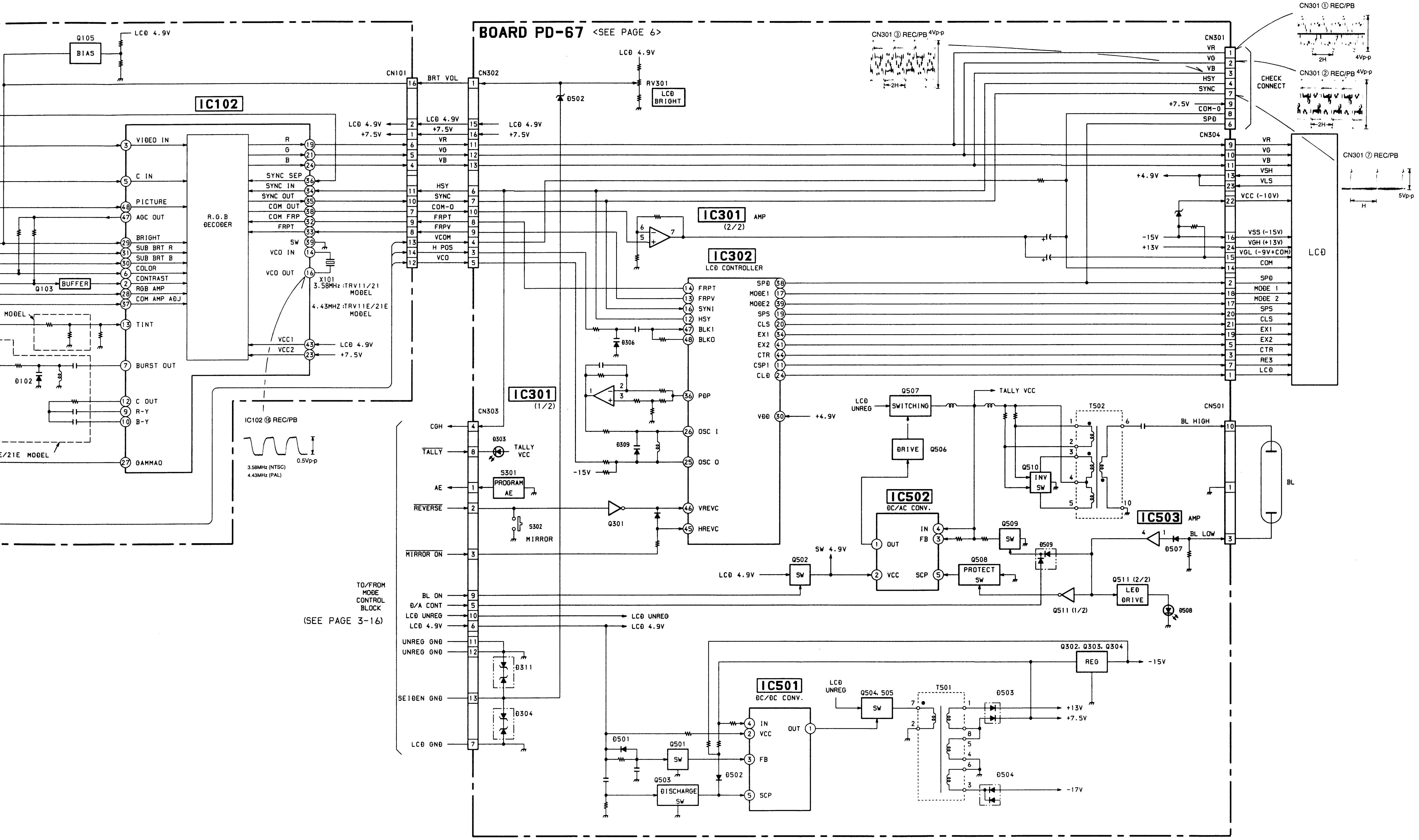
After correcting the original service problem, perform the following safety checks before releasing the set to the customer.

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, through functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replace-ment.
5. Check the B+ voltage to see it is at the values specified.
6. Flexible Circuit Board Repairing
    - Keep the temperature of the soldering iron around 270°C during repairing.
    - Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
    - Be careful not to apply force on the conductor when soldering or unsoldering.

LCD BLOCK DIAGRAM

(SEE PAGE) : Refer to service manual. (Original)
⟨SEE PAGE⟩ : Refer to Supplement-1.

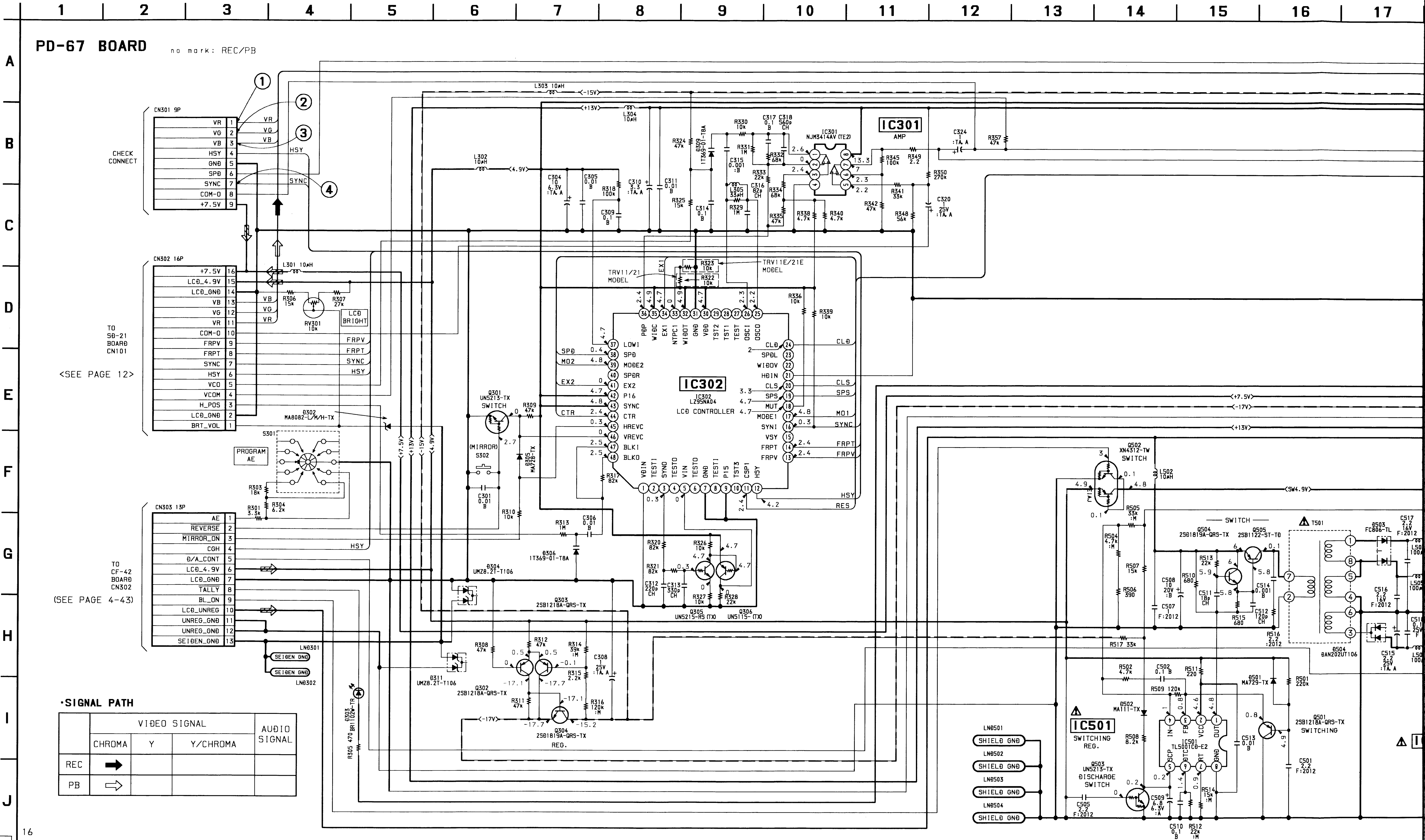

SD-21 BOARD
<SEE PAGE 12>
Q105
BIAS
LCD 4.9V
CN101
BRT VOL
IC102
CN102
Q102
BUFFER
LCD Y
LCD C
TO/FROM MODE CONTROL BLOCK
(SEE PAGE 3-16)
D0
D1
CLK
CS/LD
DAC 3V
IC101
EEPROM
BRIGHT
S-BRT R
S-BRT B
COLOR
CONTRAST
AMP
COM ADJ
HUE/BCL
VIDEO IN
C IN
PICTURE
AGC OUT
SUB BRT R
SUB BRT B
RGB AMP
COM AMP ADJ
TINT
BURST OUT
C OUT
R-Y
B-Y
GAMMA0
R.G.B DECODER
R
G
B
SYNC SEP
SYNC IN
SYNC OUT
COM OUT
COM FRP
FRPT
SW
VCO IN
VCO OUT
X101
3.58MHz :TRV11/21 MODEL
4.43MHz :TRV11E/21E MODEL
VCC1
VCC2
+7.5V
SEL
VDD
Q103
BUFFER
TRV11/21 MODEL
Q104
BUFFER
D102
TRV11E/21E MODEL
V COM
H POS
VCO
16
IC102 ⑯ REC/PB
0.5Vp-p
3.58MHz (NTSC)
4.43MHz (PAL)
BOARD PD-67 <SEE PAGE 6>
CN302
VR
VG
VB
HSY
SYNC
COM-D
FRPV
VCOM
D502
RV301
LCD BRIGHT
IC301 AMP (2/2)
IC302 LCD CONTROLLER
FRPT
FRPV
SYNI
HSY
BLKI
BLKO
SPD
MODE1
MODE2
SPS
CLS
EX1
EX2
CTR
CSP1
CLD
VDD
+4.9V
D306
PDP
OSC I
OSC O
D309
-15V
VREVC
HREVC
Q301
IC301 (1/2)
CN303
CGH
TALLY
D303
TALLY VCC
S301
PROGRAM AE
AE
REVERSE
S302
MIRROR
MIRROR ON
BL ON
D/A CONT
LCD UNREG
UNREG GND
SEIDEN GND
LCD GND
D311
D304
SW 4.9V
Q502
SW
IC501
DC/DC CONV.
IN
VCC
FB
SCP
OUT
D501
Q501
Q503
DISCHARGE SW
D502
LCD UNREG


BOARD PD-67 <SEE PAGE 6>
IC102
R.G.B DECODER
Q105 BIAS
LCD 4.9V
VIDEO IN
C IN
PICTURE
AGC OUT
BRIGHT
SUB BRT R
SUB BRT B
COLOR
CONTRAST
RGB AMP
COM AMP ADJ
TINT
BURST OUT
C OUT
R-Y
B-Y
GAMMAO
Q103 BUFFER
D102
MODEL
E/21E MODEL
SYNC SEP
SYNC IN
SYNC OUT
COM OUT
COM FRP
FRPT
SW
VCO IN
VCO OUT
X101
3.58MHz :TRV11/21 MODEL
4.43MHz :TRV11E/21E MODEL
VCC1
VCC2
+7.5V
IC102 ⑯ REC/PB
0.5Vp-p
3.58MHz (NTSC)
4.43MHz (PAL)
CN101
CN302
BRT VOL
HSY
SYNC
COM-O
FRPT
FRPV
VCOM
H POS
VCO
VR
VG
VB
RV301 LCD BRIGHT
D502
IC301 AMP (2/2)
IC302 LCD CONTROLLER
FRPT
FRPV
SYNI
HSY
BLK1
BLKO
PDP
OSC I
OSC O
VREVC
HREVC
SPD
MODE1
MODE2
SPS
CLS
EX1
EX2
CTR
CSP1
CLD
VDD
+4.9V
D306
D309
-15V
IC301 (1/2)
CN303
CGH
TALLY
D303 TALLY VCC
S301 PROGRAM AE
AE
REVERSE
Q301
S302 MIRROR
MIRROR ON
BL ON
D/A CONT
LCD UNREG
LCD 4.9V
UNREG GND
SEIDEN GND
LCD GND
D311
D304
TO/FROM MODE CONTROL BLOCK
(SEE PAGE 3-16)
CN301 ① REC/PB
CN301 ② REC/PB 4Vp-p
CN301 ③ REC/PB 4Vp-p
CN301 ⑦ REC/PB
2H
4Vp-p
5Vp-p
H
CHECK CONNECT
CN301
CN304
VR
VG
VB
HSY
SYNC
COM-O
SPD
VSH
VLS
VCC (-10V)
VSS (-15V)
VGH (+13V)
VGL (-9V+COM)
COM
MODE 1
MODE 2
SPS
CLS
EX1
EX2
CTR
RE3
LCD
+4.9V
-15V
+13V
Q507 SWITCHING
TALLY VCC
LCD UNREG
DRIVE Q506
T502
Q510 INV SW
IC502 DC/AC CONV.
IN
FB
OUT
VCC
SCP
SW 4.9V
Q502 SW
Q509 SW
D509
Q508 PROTECT SW
IC503 AMP
BL LOW
D507
Q511 (2/2) LED DRIVE
Q511 (1/2)
D508
CN501
BL HIGH
BL
Q302, Q303, Q304 REG
-15V
IC501 DC/DC CONV.
Q504, 505 SW
T501
D503
+13V
+7.5V
D504
-17V
D501
Q501 SW
Q503 DISCHARGE SW
D502

PD-67 (LCD) SCHEMATIC DIAGRAM

— Ref. No. : PD-67 Board; 8,000 Series —

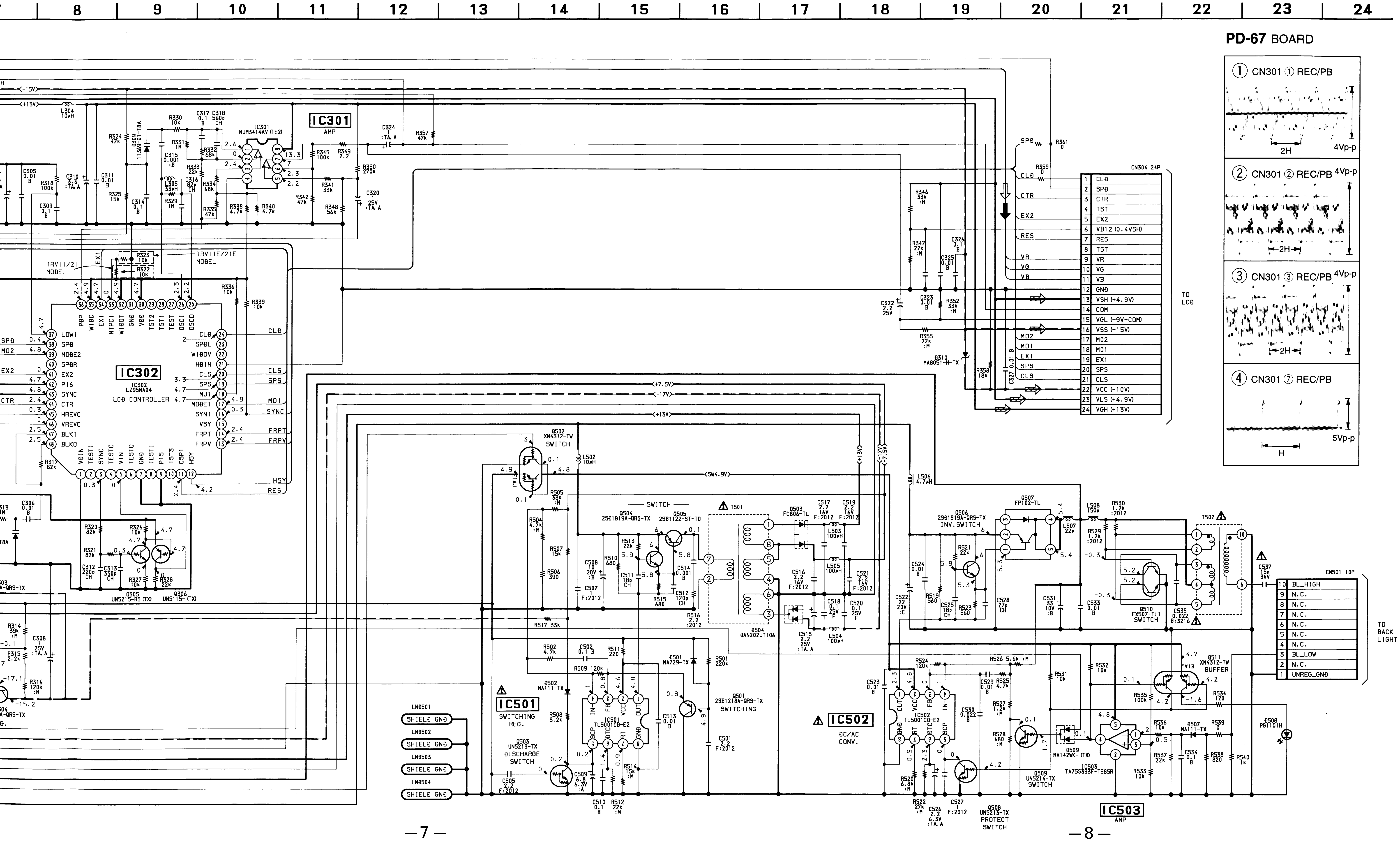
(SEE PAGE) : Refer to service manual. (Original)
⟨SEE PAGE⟩ : Refer to Supplement-1.


PD-67 BOARD
no mark: REC/PB
CN301 9P
CHECK CONNECT
VR VG VB HSY GND SPD SYNC COM-O +7.5V
CN302 16P
TO SD-21 BOARD CN101
<SEE PAGE 12>
+7.5V LCD_4.9V LCD_GND VB VG VR COM-O FRPV FRPT SYNC HSY VCO VCOM H_POS LCD_GND BRT_VOL
CN303 13P
TO CF-42 BOARD CN302
(SEE PAGE 4-43)
AE REVERSE MIRROR_ON CGH D/A_CONT LCD_4.9V LCD_GND TALLY BL_ON LCD_UNREG UNREG_GND UNREG_GND SEIDEN_GND
LN0301 LN0302 SEIDEN GND
L301 10μH
RV301 10k
LCD BRIGHT
S301 PROGRAM AE
Q301 UN5213-TX SWITCH
(MIRROR) S302
Q302 MA8082-L/M/H-TX
D305 MA728-TX
D306 1T369-01-T8A
Q304 UMZ8.2T-T106
Q303 2SB1218A-QRS-TX
Q311 UMZ8.2T-T106
Q302 2SB1218A-QRS-TX
Q304 2SD1819A-QRS-TX REG.
D303 BR1102W-TR
L302 10μH
L303 10μH
L304 10μH
<-15V> <+13V> <4.9V> <-17V> <+7.5V> <SW4.9V>
IC301 AMP
IC301 NJM3414AV (TE2)
D309 1T369-01-T8A
L305 33μH
IC302
IC302 LZ95NA04 LCD CONTROLLER
TRV11/21 MODEL
TRV11E/21E MODEL
R323 10k R322 10k
LOWI SPD MODE2 SPDR EX2 P16 SYNC CTR HREVC VREVC BLKI BLKO
CLD SPDL WIDOV HDIN CLS SPS MUT MODE1 SYNI VSY FRPT FRPV
PDP WIDC EX1 NTPC1 WIDOT GND VDD TST2 TST1 TEST OSCI OSCO
VDIN TEST1 SYNO TESTO VIN TESTO GND TEST1 P15 TST3 CSP1 HSY
Q305 UN5215-RS (TX)
Q306 UN5115-(TX)
Q502 XN4312-TW SWITCH
L502 10μH
— SWITCH —
Q504 2SD1819A-QRS-TX
Q505 2SB1122-ST-TD
T501
D503 FC806-TL
D504 DAN202UT106
D501 MA729-TX
Q501 2SB1218A-QRS-TX SWITCHING
D502 MA111-TX
IC501 SWITCHING REG.
IC501 TL5001CD-E2
Q503 UN5213-TX DISCHARGE SWITCH
LN0501 LN0502 LN0503 LN0504 SHIELD GND
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17
A B C D E F G H I J
① ② ③ ④

·SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡			
PB	⇨			

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.



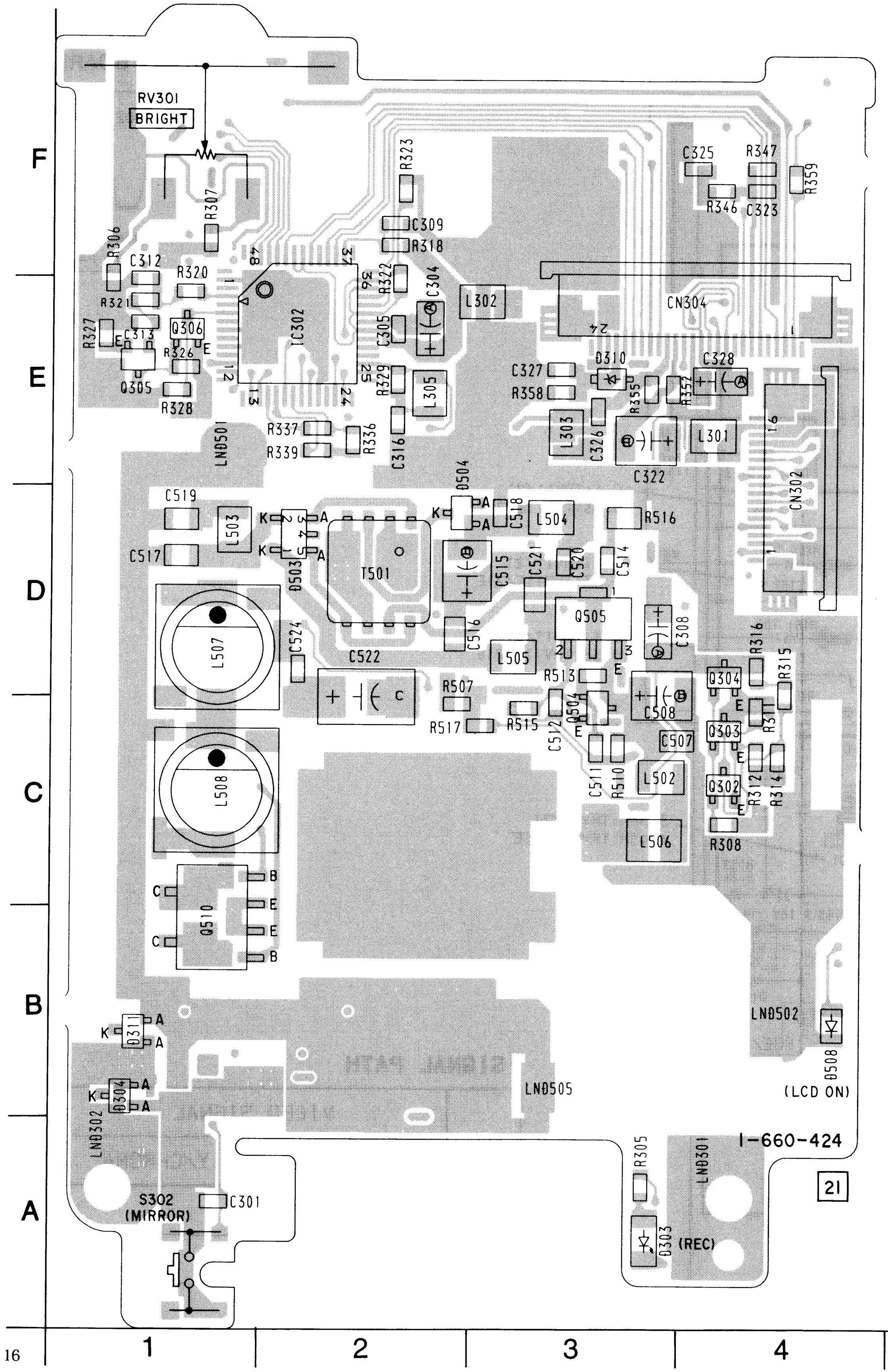
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
23
24
PD-67 BOARD
① CN301 ① REC/PB
2H
4Vp-p
② CN301 ② REC/PB
4Vp-p
2H
③ CN301 ③ REC/PB
4Vp-p
2H
④ CN301 ⑦ REC/PB
5Vp-p
H
IC301
AMP
IC301 NJM3414AV (TE2)
IC302
IC302 LZ95NA04
LCD CONTROLLER
TRV11/21 MODEL
TRV11E/21E MODEL
CN304 24P
1 CLD
2 SPD
3 CTR
4 TST
5 EX2
6 VB12 (0.4VSH)
7 RES
8 TST
9 VR
10 VG
11 VB
12 GND
13 VSH (+4.9V)
14 COM
15 VGL (-9V+COM)
16 VSS (-15V)
17 MO2
18 MO1
19 EX1
20 SPS
21 CLS
22 VCC (-10V)
23 VLS (+4.9V)
24 VGH (+13V)
TO LCD
CN501 10P
10 BL_HIGH
9 N.C.
8 N.C.
7 N.C.
6 N.C.
5 N.C.
4 N.C.
3 BL_LOW
2 N.C.
1 UNREG_GND
TO BACK LIGHT
⚠ IC501
SWITCHING REG.
IC501 TL5001CD-E2
⚠ IC502
DC/AC CONV.
IC502 TL5001CD-E2
IC503
AMP
IC503 TA75S393F-TE85R
⚠ T501
⚠ T502
Q502 XN4312-TW SWITCH
Q503 UN5213-TX DISCHARGE SWITCH
Q504 2SD1819A-QRS-TX
Q505 2SB1122-ST-TD
SWITCH
Q501 2SB1218A-QRS-TX SWITCHING
Q506 2SD1819A-QRS-TX INV.SWITCH
Q507 FP102-TL
Q508 UN5213-TX PROTECT SWITCH
Q509 UN5214-TX SWITCH
Q510 FX507-TL1 SWITCH
Q511 XN4312-TW BUFFER
Q305 UN5215-R5 (TX)
Q306 UN5115-(TX)
D310 MA8051-M-TX
D501 MA729-TX
D502 MA111-TX
D503 FC806-TL
D504 DAN202UT106
D507 MA111-TX
D508 PG1101H
D509 MA142WK-(TX)
LND501 SHIELD GND
LND502 SHIELD GND
LND503 SHIELD GND
LND504 SHIELD GND
(-15V)
(+13V)
(+7.5V)
(-17V)
(SW4.9V)
LOW1
SPD
MODE2
SPDR
EX2
P16
SYNC
CTR
HREVC
VREVC
BLK1
BLKO
CLD
SPDL
WIDEV
HDIN
CLS
SPS
MUT
MODE1
SYN1
VSY
FRPT
FRPV
HSY
RES
MO1
SYNC
FRPT
FRPV
PDP
WIDC
EX1
NTPC1
WIDOT
GND
VDD
TST2
TST1
TEST
OSC1
OSCO
VDIN
TEST1
SYNO
TESTO
VIN
TESTO
GND
TEST1
P15
TST3
CSP1
HSY
L304 10μH
L305 33μH
L502 10μH
L503 100μH
L504 100μH
L505 100μH
L506 4.7μH
L507 22μ
L508 150μ

PD-67 (LCD) PRINTED WIRING BOARD

— Ref. No. : PD-67 Board; 8,000 Series —

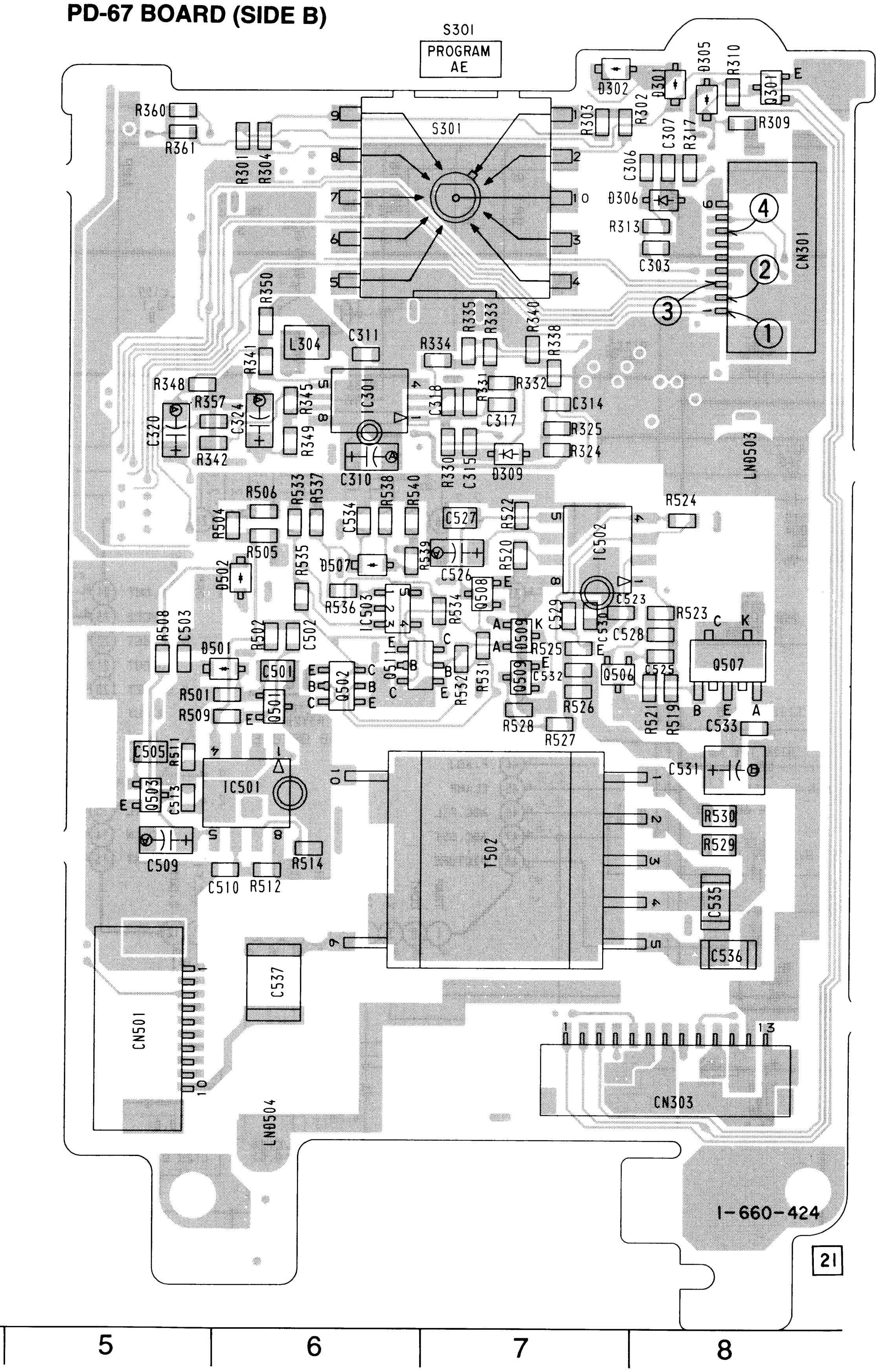
There are few cases that the part printed on this diagram isn't mounted in this model.

PD-67 BOARD (SIDE A)



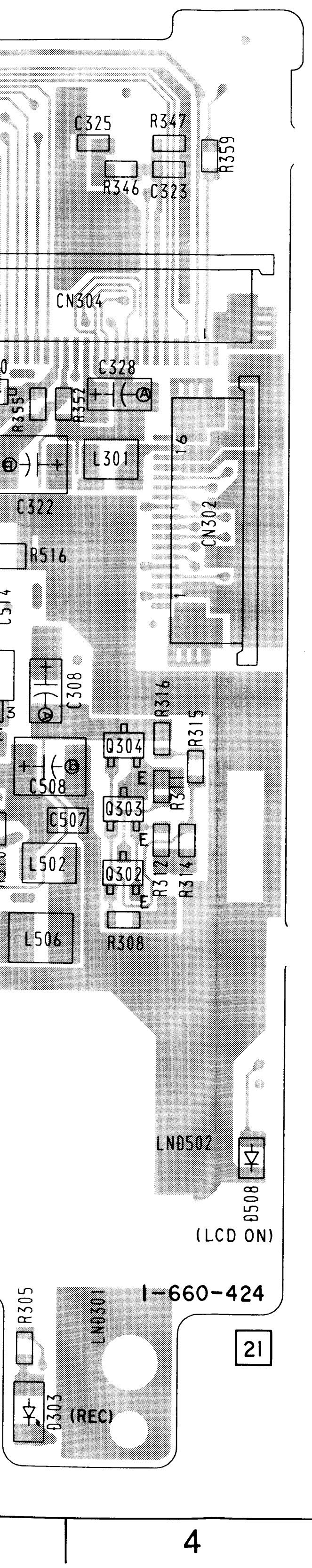
F
E
D
C
B
A
1
2
3
4
RV301
BRIGHT
R307
R306
C312
R320
R321
R327
C313
Q306
R326
Q305
R328
IC302
48
37
36
25
24
13
12
R323
C309
R318
R322
C304
C305
R329
L302
L305
R337
R339
R336
C316
LND501
C325
R347
R359
R346
C323
CN304
C327
R358
D310
C328
R355
R352
L303
C326
L301
C322
CN302
C519
C517
L503
D503
T501
D504
C518
L504
R516
C515
C521
C520
C514
L507
L508
C524
C522
Q505
C516
L505
C308
R513
R507
R517
R515
Q504
C512
C508
C507
C511
R510
L502
Q304
Q303
Q302
R316
R315
R311
R312
R314
R308
L506
Q510
C
B
E
K
A
D311
D304
LND302
LND502
D508
(LCD ON)
LND505
R305
LND301
D303
(REC)
S302
(MIRROR)
C301
1-660-424
21

PD-67 BOARD (SIDE B)

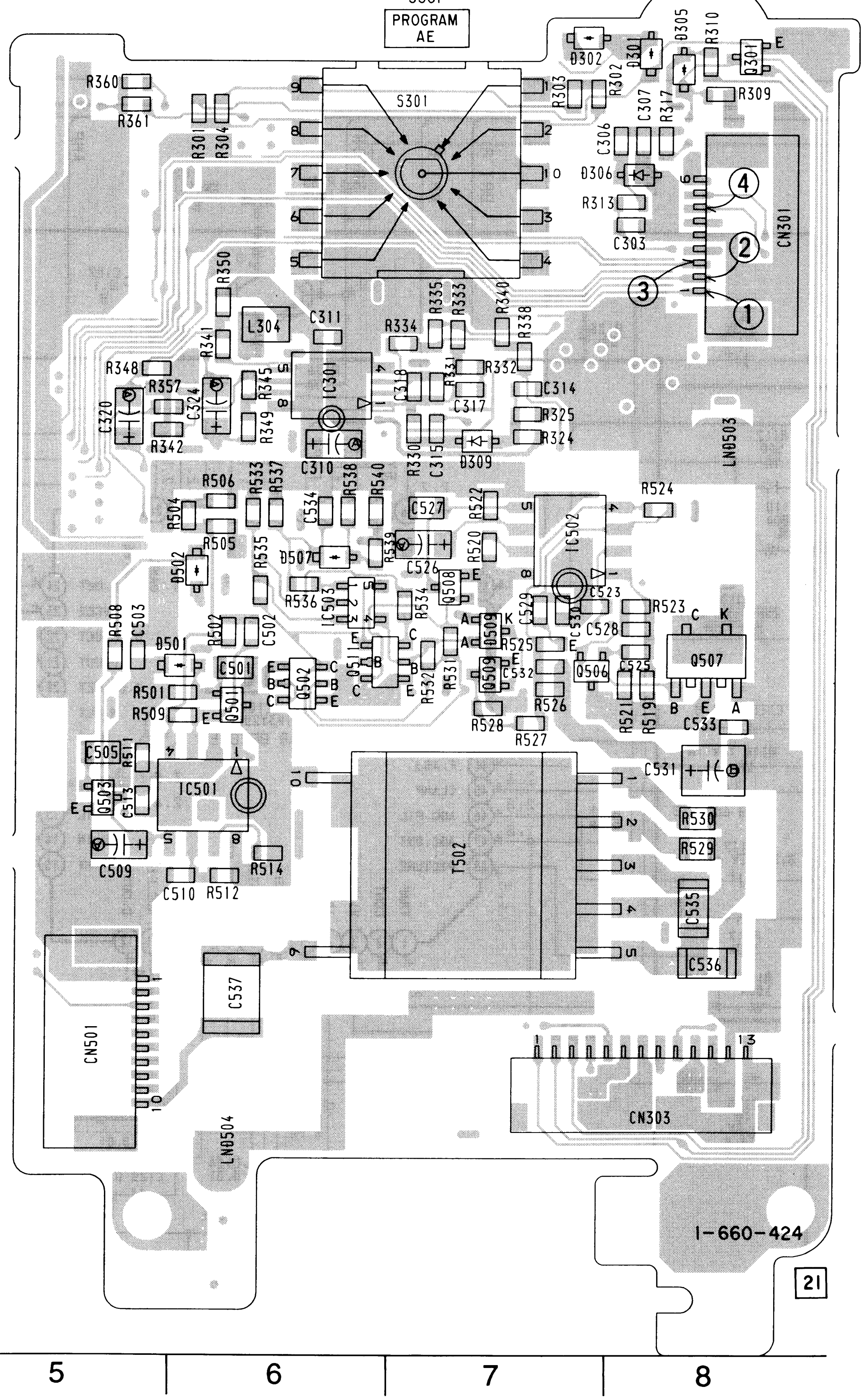


S301
PROGRAM
AE
5
6
7
8
R360
R361
R301
R304
S301
1
2
3
4
9
10
D302
R303
R302
D301
D305
R317
Q301
R310
R309
C307
C306
D306
R313
C303
CN301
①
②
③
④
R350
L304
C311
R334
R335
R333
R340
R338
R341
R348
R357
C324
R345
IC301
C318
R331
R332
C317
C314
R325
R324
C320
R342
R349
C310
R330
C315
D309
LND503
R506
R533
R537
C534
R538
R540
C527
R522
R524
IC502
R504
R505
R535
D502
D507
R539
C526
R520
R536
IC503
R534
Q508
R508
C503
D501
R502
C502
C501
Q502
Q511
R532
R531
Q509
C529
C530
C523
R523
C528
Q506
C525
Q507
R525
C532
R501
R509
Q501
R526
R528
R527
R521
R519
C533
C531
C505
R511
Q503
C513
IC501
C509
C510
R512
R514
T502
R530
R529
C535
C536
CN501
C537
LND504
CN303
1
13
1-660-424
21

am isn't mounted in this model.

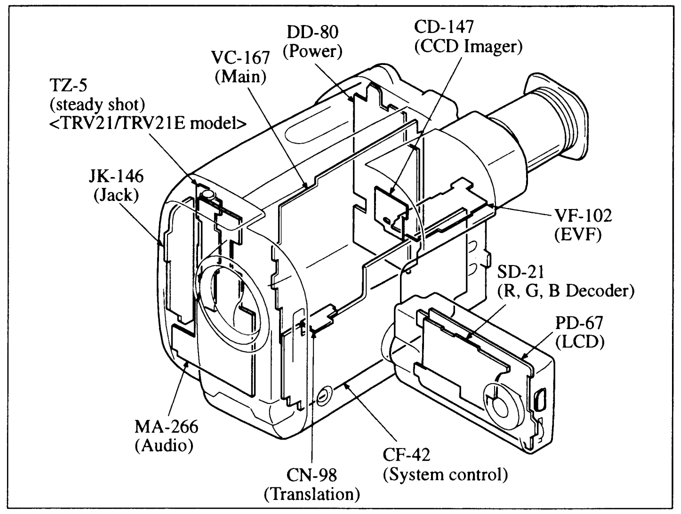

C325
R347
R359
R346
C323
CN304
C328
R355
R352
L301
C322
CN302
R516
C308
R316
R315
Q304
C508
R311
C507
Q303
L502
Q302
R312
R314
L506
R308
LND502
D508
(LCD ON)
R305
LND301
1-660-424
21
D303
(REC)
4

PD-67 BOARD (SIDE B)


S301
PROGRAM AE
S301
D302
Q301
D305
R310
Q301
E
R303
R302
R309
R307
R317
C306
D306
R313
C303
CN301
④
②
③
①
R360
R361
R301
R304
R350
R335
R333
R340
R338
L304
C311
R334
IC301
R341
R348
R357
C324
R345
R349
C318
R331
R332
C317
C314
R325
R324
C320
R342
C310
R330
C315
D309
LND503
R506
R533
R537
C534
R538
R540
C527
R522
R524
R504
R505
R535
R539
C526
R520
IC502
D502
D507
R536
IC503
R534
Q508
C529
C530
C523
R523
R508
C503
C502
D501
Q510
R525
C532
C528
Q506
C525
Q507
R501
C501
Q502
Q511
R532
R531
Q509
R526
R509
Q501
R528
R527
R521
R519
C533
C505
R511
IC501
C531
Q503
C513
R530
C509
R514
T502
R529
C510
R512
C535
C536
C537
CN501
LND504
CN303
1
13
1-660-424
21
5
6
7
8

PD-67 BOARD

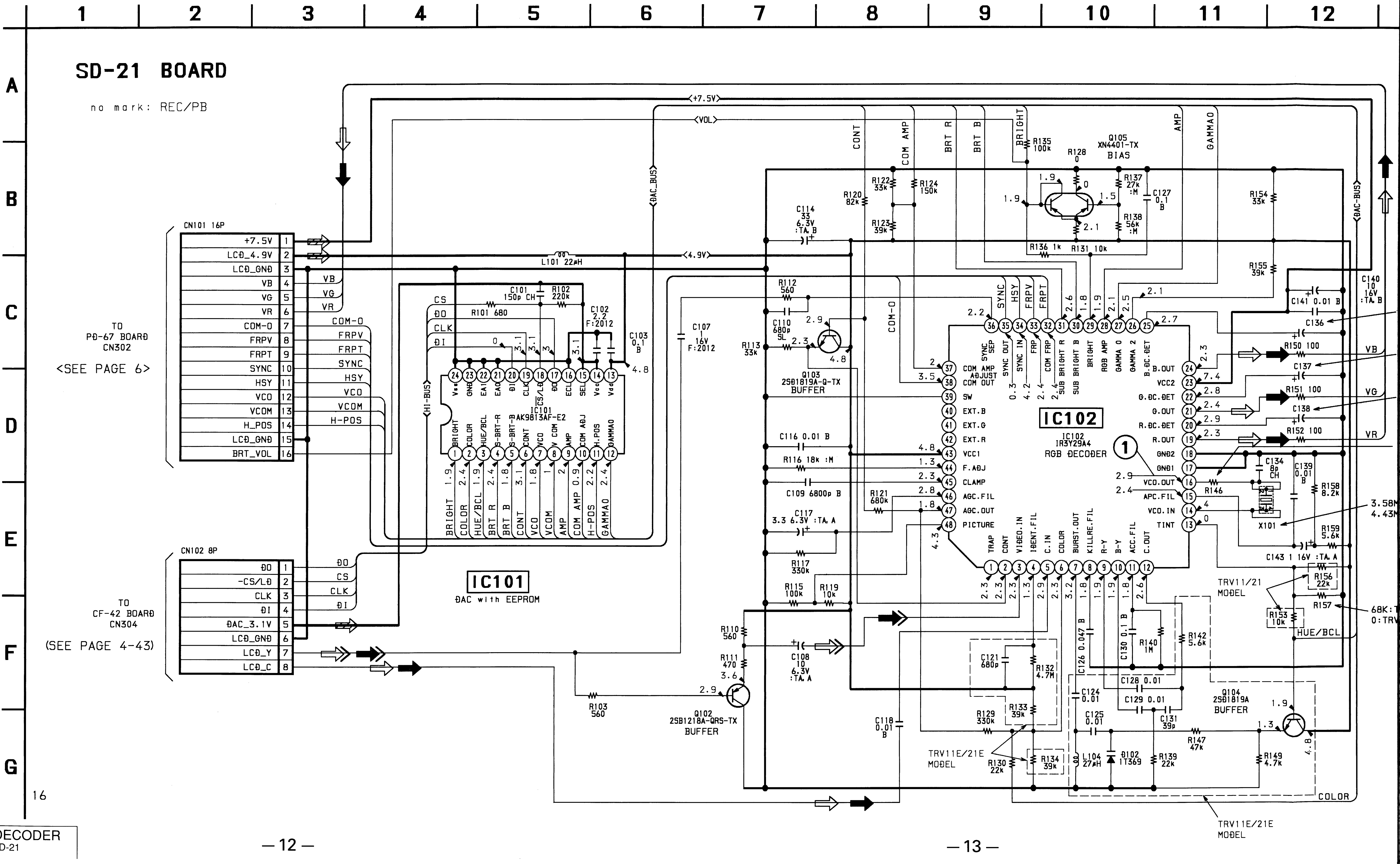
C301	A–1
C304	E–2
C305	E–2
C306	F–8
C308	D–3
C309	F–2
C310	E–6
C311	E–6
C312	E–1
C313	E–1
C314	E–7
C315	E–7
C316	E–2
C317	E–7
C318	E–7
C320	E–5
C322	E–3
C323	F–4
C324	F–6
C325	F–4
C326	E–3
C327	E–3
C501	D–6
C502	D–6
C505	C–5
C507	C–3
C508	D–3
C509	C–5
C510	C–6
C511	C–3
C512	C–3
C513	C–5
C514	D–3
C515	D–3
C516	D–2
C517	D–1
C518	D–3
C519	D–1
C520	D–3
C521	D–3
C522	D–2
C523	D–7
C524	D–2
C525	D–8
C526	D–7
C527	D–7
C528	D–7
C529	D–7
C530	D–7
C531	C–8
C533	C–8
C534	E–6
C535	C–8
C537	B–6
CN301	F–8
CN302	E–4
CN303	B–8
CN304	E–4
CN501	B–5
D302	F–7
D303	A–3
D304	B–1
D305	F–8
D306	F–8
D309	E–7
D310	E–3
D311	B–1
D501	D–6
D502	D–6
D503	D–2
D504	D–2
D507	D–6
D508	B–4
D509	D–7
IC301	E–6
IC302	E–2
IC501	C–6
IC502	D–7
IC503	D–6
L301	E–4
L302	E–3
L303	E–3
L304	E–6
L305	E–2
L502	C–3
L503	D–1
L504	D–3
L505	D–3
L506	C–3
L507	D–1
L508	C–1
Q301	F–8
Q302	C–4
Q303	D–4
Q304	D–4
Q305	E–1
Q306	E–1
Q501	C–6
Q502	D–6
Q503	C–5
Q504	C–3
Q505	D–3
Q506	D–7
Q507	D–8
Q508	D–7
Q509	D–7
Q510	B–1
Q511	D–7
R301	F–6
R303	F–7
R304	F–6
R305	A–3
R306	F–1
R307	F–1
R308	C–4
R309	F–8
R310	F–8
R311	D–4
R312	C–4
R313	F–8
R314	C–4
R315	D–4
R316	D–4
R317	F–8
R318	F–2
R320	E–1
R321	E–1
R322	F–2
R323	F–2
R324	E–7
R325	E–7
R326	E–1
R327	E–1
R328	E–1
R329	E–2
R330	E–7
R331	E–7
R332	E–7
R333	E–7
R334	E–7
R335	E–7
R336	E–2
R338	E–7
R339	E–2
R340	E–7
R341	E–6
R342	E–6
R345	E–6
R346	F–4
R347	F–4
R348	E–5
R349	E–6
R350	E–6
R352	E–4
R355	E–3
R357	E–6
R358	E–3
R359	F–4
R361	F–5
R501	D–5
R502	D–6
R504	D–6
R505	D–6
R506	E–6
R507	D–2
R508	D–5
R509	D–5
R510	C–3
R511	C–5
R512	C–6
R513	D–3
R514	C–6
R515	C–3
R516	D–3
R517	C–2
R519	C–8
R520	D–7
R521	C–8
R522	D–7
R523	D–8
R524	E–8
R525	D–7
R526	D–7
R527	C–7
R528	C–7
R529	C–8
R530	C–8
R531	D–7
R532	D–7
R533	D–6
R534	D–7
R535	D–6
R536	D–6
R537	D–6
R538	E–6
R539	D–7
R540	E–6
RV301	F–1
S301	F–7
S302	A–1
T501	D–2
T502	C–7


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

SD-21 (R.G.B DECODER) SCHEMATIC DIAGRAM

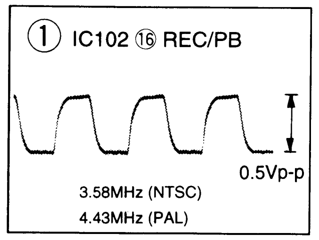
— Ref. No. : SD-21 Board; 8,000 Series —

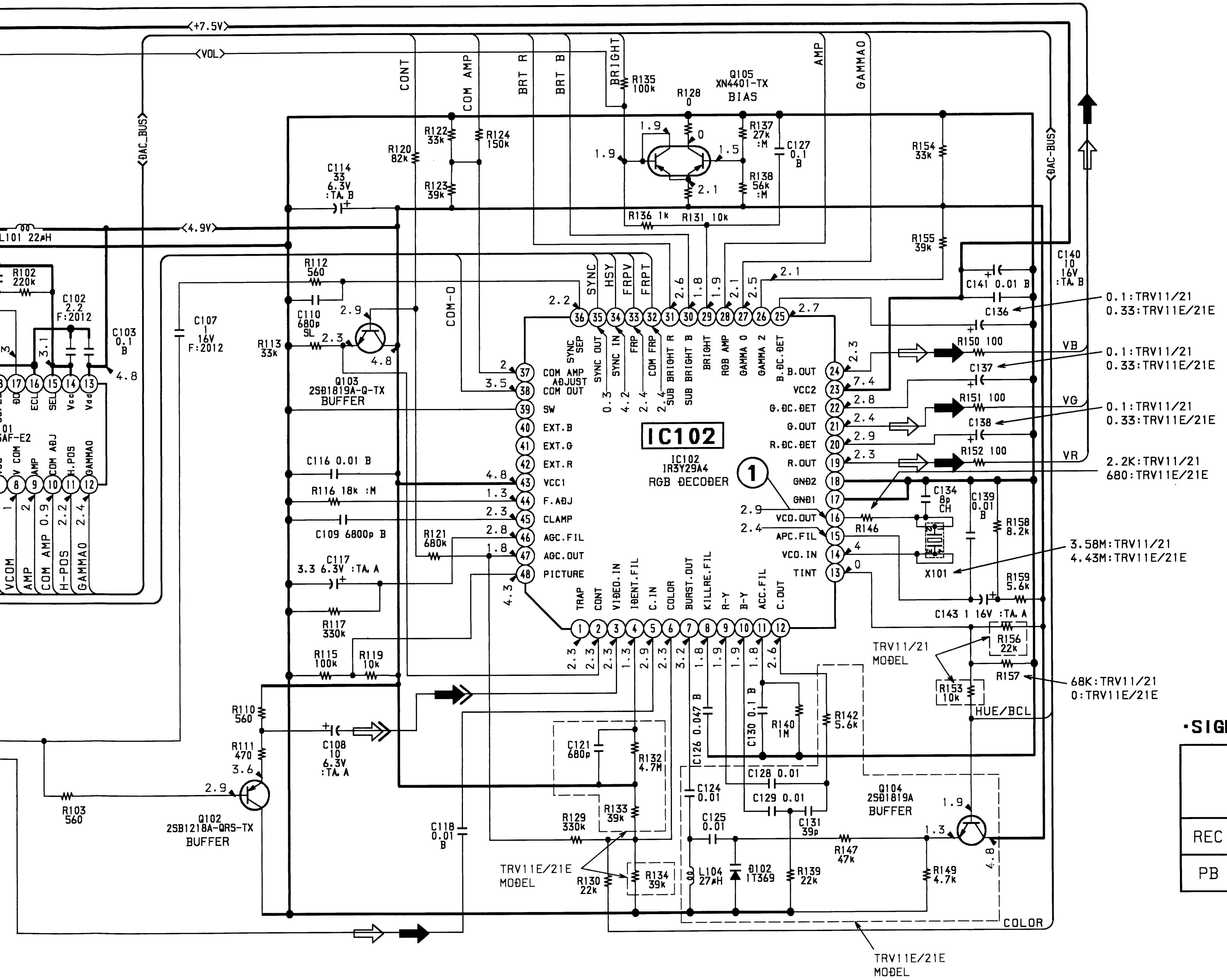
(SEE PAGE) :	Refer to service manual. (Original)
〈SEE PAGE〉 :	Refer to Supplement-1.


1
2
3
4
5
6
7
8
9
10
11
12
A
B
C
D
E
F
G
SD-21 BOARD
no mark: REC/PB
CN101 16P
+7.5V
LCD_4.9V
LCD_GND
VB
VG
VR
COM-O
FRPV
FRPT
SYNC
HSY
VCO
VCOM
H_POS
LCD_GND
BRT_VOL
TO PD-67 BOARD CN302
<SEE PAGE 6>
CN102 8P
DO
-CS/LD
CLK
DI
DAC_3.1V
LCD_GND
LCD_Y
LCD_C
TO CF-42 BOARD CN304
(SEE PAGE 4-43)
<+7.5V>
<VOL>
<4.9V>
<DAC_BUS>
<HI-BUS>
L101 22μH
C101 150p CH
R102 220k
R101 680
C102 2.2 F:2012
C103 0.1 B
C107 1 16V F:2012
IC101 AK9813AF-E2
IC101
DAC with EEPROM
BRIGHT
COLOR
HUE/BCL
BRT R
BRT B
CONT
VCO
VCOM
AMP
COM AMP
H-POS
GAMMA0
R112 560
C110 680p SL
R113 33k
Q103 2SB1819A-Q-TX BUFFER
C114 33 6.3V :TA B
R120 82k
R122 33k
R123 39k
R124 150k
R135 100k
R128 0
Q105 XN4401-TX BIAS
R137 27k :M
C127 0.1 B
R138 56k :M
R136 1k
R131 10k
R154 33k
R155 39k
C116 0.01 B
R116 18k :M
C109 6800p B
R121 680k
C117 3.3 6.3V :TA A
R117 330k
R115 100k
R119 10k
R110 560
R111 470
C108 10 6.3V :TA A
R103 560
Q102 2SB1218A-QRS-TX BUFFER
C118 0.01 B
IC102
IC102 IR3Y29A4 RGB DECODER
SYNC SEP
SYNC OUT
SYNC IN
FRP
COM FRP
SUB BRIGHT R
SUB BRIGHT B
BRIGHT
RGB AMP
GAMMA 0
GAMMA 2
B.DC.DET
COM AMP ADJUST
COM OUT
SW
EXT.B
EXT.G
EXT.R
VCC1
F.ADJ
CLAMP
AGC.FIL
AGC.OUT
PICTURE
B.OUT
VCC2
G.DC.DET
G.OUT
R.DC.DET
R.OUT
GND2
GND1
VCO.OUT
APC.FIL
VCO.IN
TINT
TRAP
VIDEO.IN
IDENT.FIL
C.IN
BURST.OUT
KILLRE.FIL
R-Y
B-Y
ACC.FIL
C.OUT
C141 0.01 B
C140 10 16V :TA B
C136
R150 100
C137
R151 100
C138
R152 100
VB
VG
VR
C134 8p CH
C139 0.01 B
R158 8.2k
R146
X101
3.58M
4.43M
R159 5.6k
C143 1 16V :TA A
R156 22k
R157
TRV11/21 MODEL
R153 10k
HUE/BCL
68K:T
0:TRV
C121 680p
R132 4.7M
R129 330k
R133 39k
TRV11E/21E MODEL
R130 22k
R134 39k
C126 0.047 B
C124 0.01
C125 0.01
L104 27μH
D102 1T369
C130 0.1 B
R140 1M
R142 5.6k
C128 0.01
C129 0.01
C131 39p
R139 22k
R147 47k
Q104 2SB1819A BUFFER
R149 4.7k
COLOR
TRV11E/21E MODEL
①
16

nual. (Original)
nt-1.

SD-21 BOARD




<+7.5V>
<VOL>
<DAC_BUS>
<4.9V>
L101 22µH
R102 220k
C102 2.2 F:2012
C103 0.1 B
C107 1 16V F:2012
CONT
COM AMP
BRT R
BRT B
BRIGHT
R135 100k
R128 0
Q105 XN4401-TX BIAS
AMP
GAMMA0
R137 27k :M
C127 0.1 B
R138 56k :M
R136 1k
R131 10k
R122 33k
R124 150k
R120 82k
R123 39k
C114 33 6.3V :TA B
R112 560
C110 680p SL
R113 33k
Q103 2SB1819A-Q-TX BUFFER
COM-O
SYNC
HSY
FRPV
FRPT
R154 33k
R155 39k
C140 10 16V :TA B
C141 0.01 B
C136
R150 100
C137
R151 100
C138
R152 100
VB
VG
VR
0.1:TRV11/21
0.33:TRV11E/21E
2.2K:TRV11/21
680:TRV11E/21E
IC102
IC102 IR3Y29A4 RGB DECODER
SYNC SEP
SYNC OUT
SYNC IN
FRP
COM FRP
SUB BRIGHT R
SUB BRIGHT B
BRIGHT
RGB AMP
GAMMA 0
GAMMA 2
B.DC.DET
COM AMP ADJUST
COM OUT
SW
EXT.B
EXT.G
EXT.R
VCC1
F.ADJ
CLAMP
AGC.FIL
AGC.OUT
PICTURE
B.OUT
VCC2
G.DC.DET
G.OUT
R.DC.DET
R.OUT
GND2
GND1
VCO.OUT
APC.FIL
VCO.IN
TINT
TRAP
CONT
VIDEO.IN
IDENT.FIL
C.IN
COLOR
BURST.OUT
KILLRE.FIL
R-Y
B-Y
ACC.FIL
C.OUT
C116 0.01 B
R116 18k :M
C109 6800p B
R121 680k
C117 3.3 6.3V :TA A
R117 330k
R115 100k
R119 10k
C134 8p CH
C139 0.01 B
R146
R158 8.2k
X101
3.58M:TRV11/21
4.43M:TRV11E/21E
R159 5.6k
C143 1 16V :TA A
R156 22k
R157
68K:TRV11/21
0:TRV11E/21E
R153 10k
TRV11/21 MODEL
HUE/BCL
R110 560
R111 470
C108 10 6.3V :TA A
Q102 2SB1218A-QRS-TX BUFFER
R103 560
C121 680p
R132 4.7M
R129 330k
R133 39k
C118 0.01 B
R130 22k
R134 39k
TRV11E/21E MODEL
C126 0.047 B
C130 0.1 B
R140 1M
R142 5.6k
C124 0.01
C128 0.01
C129 0.01
C125 0.01
C131 39p
L104 27µH
D102 1T369
R139 22k
R147 47k
Q104 2SD1819A BUFFER
R149 4.7k
COLOR
TRV11E/21E MODEL
VCOM
AMP
COM AMP
H-POS
GAMMA0
SEL
ECL
Vcc
Vdd

·SIGNAL PATH

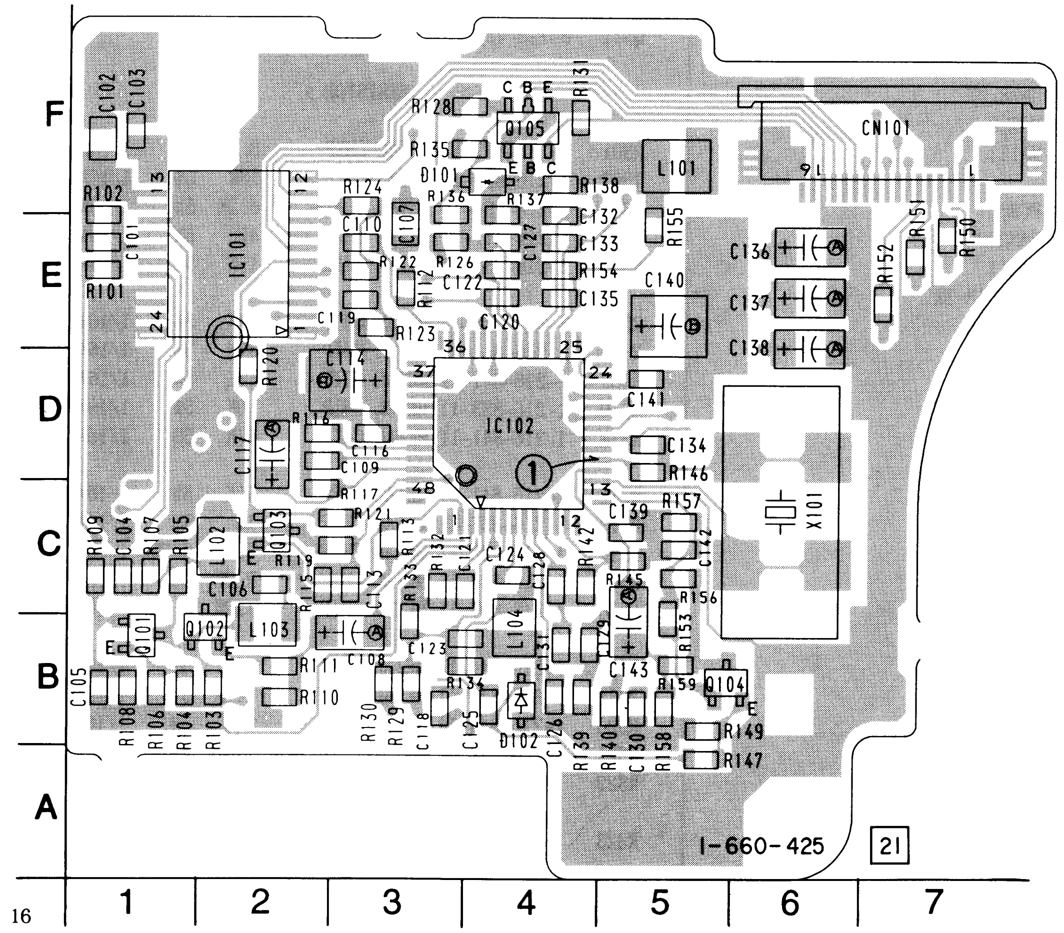
	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC	➡	➡➡		
PB	⇨	⇨⇨		

SD-21 (R.G.B DECODER) PRINTED WIRING BOARD

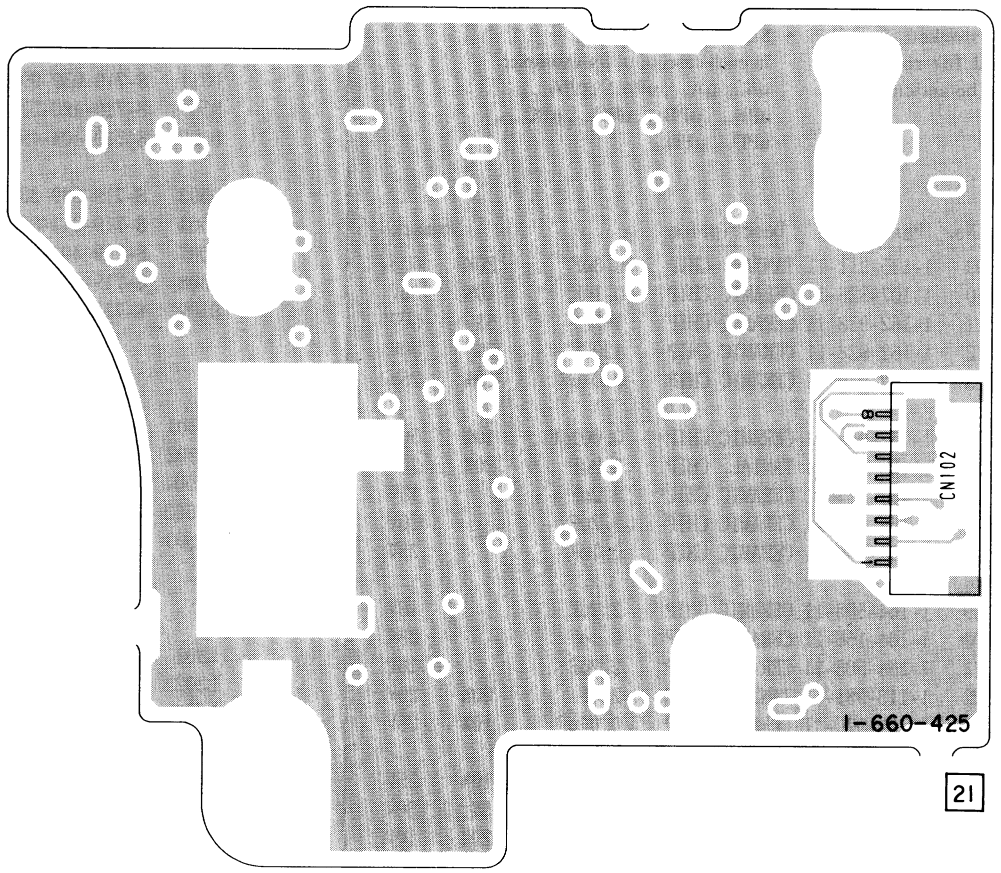
— Ref. No. : SD-21 Board; 8,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

SD-21 BOARD (SIDE A)

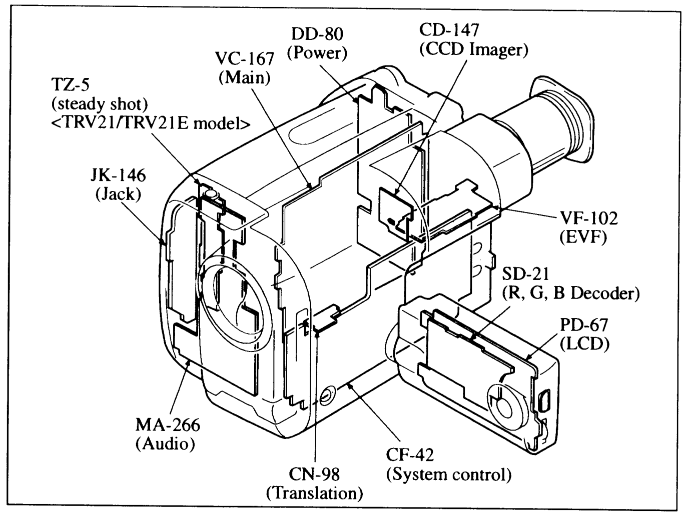

F
E
D
C
B
A
1
2
3
4
5
6
7
16
IC101
IC102
CN101
L101
L103
L104
L102
X101
Q105
Q104
Q103
Q102
Q101
D101
D102
1-660-425
21

SD-21 BOARD (SIDE B)


CN102
1-660-425
21

SD-21 BOARD

C101	E–1	D102	B–4	R129	B–3
C102	F–1			R130	B–3
C103	F–1	IC101	E–2	R131	F–4
C107	E–3	IC102	D–4	R132	C–3
C108	B–3			R133	C–3
C109	D–3	L101	F–5	R134	B–4
C110	E–3	L104	B–4	R135	F–3
C114	D–3			R136	F–3
C116	D–3	Q102	B–2	R137	F–4
C117	D–2	Q103	C–2	R138	F–4
C118	B–3	Q104	B–5	R139	B–4
C121	C–4	Q105	F–4	R140	A–5
C124	C–4			R142	C–4
C125	B–4	R101	E–1	R146	D–5
C126	B–4	R102	F–1	R147	A–5
C127	E–4	R103	B–2	R149	B–5
C128	C–4	R110	B–2	R150	E–7
C129	B–5	R111	B–2	R151	E–7
C130	A–5	R112	E–3	R152	E–7
C131	B–4	R113	C–3	R154	E–4
C134	D–5	R115	C–2	R155	E–5
C136	E–6	R116	D–2	R156	C–6
C137	E–6	R117	C–3	R157	C–5
C138	D–6	R119	C–2	R158	A–5
C139	C–5	R120	D–2	R159	B–5
C140	E–5	R121	C–3		
C141	D–5	R122	E–3	X101	C–6
C143	B–5	R123	E–3		
		R124	F–3		
CN101	F–7	R128	F–3		


DD-80
(Power)
CD-147
(CCD Imager)
VC-167
(Main)
TZ-5
(steady shot)
<TRV21/TRV21E model>
JK-146
(Jack)
VF-102
(EVF)
SD-21
(R, G, B Decoder)
PD-67
(LCD)
MA-266
(Audio)
CF-42
(System control)
CN-98
(Translation)

ELECTRICAL PARTS LIST

NOTE:

When indicating parts by reference number, please include the board name.

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: µF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: µH
- SEMICONDUCTORS
  In each case, u: µ, for example:
  uA...: µA... , uPA... , µPA... ,
  uPB... , µPB... , uPC... , µPC... ,
  uPD..., µPD...

Ref. No.	Part No.	Description			Remarks
	A-7072-858-A	PD-67 BOARD, COMPLETE			(TRV11/TRV21)
		*********************			
	A-7072-860-A	PD-67P BOARD, COMPLETE			(TRV11E/TRV21E)
		**********************			
					(Ref.No.8,000 Series)
		< CAPACITOR >			
C301	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C304	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V
C305	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C306	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C308	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C309	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C310	1-107-687-11	TANTAL. CHIP	3.3uF	20%	20V
C311	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C312	1-162-957-11	CERAMIC CHIP	220PF	5%	50V
C313	1-162-959-11	CERAMIC CHIP	330PF	5%	50V
C314	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C315	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C316	1-162-926-11	CERAMIC CHIP	82PF	5%	50V
C317	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C318	1-164-363-11	CERAMIC CHIP	560PF	5%	50V
C320	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C322	1-135-212-21	TANTAL. CHIP	2.2uF	20%	25V
					(TRV11/TRV21)
C322	1-104-916-11	TANTAL. CHIP	6.8uF	20%	20V
					(TRV11E/TRV21E)
C323	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C324	1-135-177-21	TANTALUM CHIP	1uF	20%	20V
C325	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C326	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C327	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C501	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C502	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C505	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C507	1-164-346-11	CERAMIC CHIP	1uF		16V
C508	1-113-985-11	TANTAL. CHIP	10uF	20%	20V
C509	1-135-211-11	TANTAL. CHIP	6.8uF	20%	6.3V
C510	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
C511	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C512	1-162-928-11	CERAMIC CHIP	120PF	5%	50V
C513	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C514	1-162-964-11	CERAMIC CHIP	0.001uF	10%	50V
C515	1-135-212-21	TANTAL. CHIP	2.2uF	20%	25V
C516	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C517	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C518	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C519	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C520	1-164-156-11	CERAMIC CHIP	0.1uF		25V
C521	1-164-505-11	CERAMIC CHIP	2.2uF		16V
C522	1-113-981-11	TANTAL. CHIP	22uF	20%	20V
C523	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C524	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C525	1-162-918-11	CERAMIC CHIP	18PF	5%	50V
C526	1-135-149-21	TANTALUM CHIP	2.2uF	20%	10V
C527	1-164-346-11	CERAMIC CHIP	1uF		16V
C528	1-162-920-11	CERAMIC CHIP	27PF	5%	50V
C529	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C530	1-164-227-11	CERAMIC CHIP	0.022uF	10%	25V
C531	1-113-682-11	TANTAL. CHIP	33uF	20%	10V
C533	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V
C534	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V
⚠C535	1-163-063-00	CERAMIC CHIP	0.022uF	10%	50V
⚠C537	1-109-858-11	CERAMIC CHIP	15PF	10%	3KV
		< CONNECTOR >			
CN301	1-764-708-21	CONNECTOR, FFC/FPC (LIF) 9P			
CN302	1-766-346-21	CONNECTOR, FFC/FPC 16P			
CN303	1-770-630-21	PIN, CONNECTOR 13P			
CN304	1-691-388-11	CONNECTOR, FFC/FPC (ZIF) 24P			
CN501	1-764-709-11	CONNECTOR, FFC/FPC (LIF) 10P			
		< DIODE >			
D302	8-719-420-14	DIODE	MA8082-M		
D303	8-719-951-20	LED	BR1102W		
D304	8-719-039-99	DIODE	UMZ8.2T		
D305	8-719-421-27	DIODE	MA728		
D306	8-713-102-80	DIODE	1T369-01-T8A		
D309	8-713-102-80	DIODE	1T369-01-T8A		
D310	8-719-420-90	DIODE	MA8051-M		
D311	8-719-039-99	DIODE	UMZ8.2T		
D501	8-719-420-51	DIODE	MA729		
D502	8-719-404-49	DIODE	MA111		
D503	8-719-989-33	DIODE	FC806		
D504	8-719-941-86	DIODE	DAN202U		
D507	8-719-404-49	DIODE	MA111		
D508	8-719-058-86	DIODE	PG1101H-TR		
D509	8-719-027-50	DIODE	MA142WK		
		< IC >			
IC301	8-759-359-49	IC	NJM3414AV(TE2)		
IC302	8-759-394-52	IC	LZ95NA04		
⚠IC501	8-759-521-35	IC	TL5001CD		
⚠IC502	8-759-521-35	IC	TL5001CD		
IC503	8-759-075-70	IC	TA75S393F		
		< COIL >			
L301	1-414-078-11	INDUCTOR 10uH			
L302	1-414-078-11	INDUCTOR 10uH			
L303	1-414-078-11	INDUCTOR 10uH			
L304	1-414-078-11	INDUCTOR 10uH			
L305	1-412-957-11	INDUCTOR 33uH			
L502	1-414-078-11	INDUCTOR 10uH			
L503	1-412-963-11	INDUCTOR 100uH			
L504	1-412-963-11	INDUCTOR 100uH			
L505	1-412-963-11	INDUCTOR 100uH			
L506	1-412-028-11	INDUCTOR CHIP 4.7uH			
L507	1-424-674-11	COIL, CHOKE 22uH			
L508	1-406-924-11	COIL, CHOKE 150uH			
		< TRANSISTOR >			
Q301	8-729-402-42	TRANSISTOR	UN5213		
Q302	8-729-420-24	TRANSISTOR	2SB1218A-QRS		
Q303	8-729-420-24	TRANSISTOR	2SB1218A-QRS		
Q304	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q305	8-729-020-99	TRANSISTOR	UN5215-RS		
Q306	8-729-420-53	TRANSISTOR	UN5115		
Q501	8-729-420-24	TRANSISTOR	2SB1218A-QRS		
Q502	8-729-420-20	TRANSISTOR	XN4312		
Q503	8-729-402-42	TRANSISTOR	UN5213		
Q504	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q505	8-729-804-41	TRANSISTOR	2SB1122-S		
Q506	8-729-230-63	TRANSISTOR	2SC4116-YG		
Q507	8-729-823-84	TRANSISTOR	FP102		
Q508	8-729-402-42	TRANSISTOR	UN5213		
Q509	8-729-402-93	TRANSISTOR	UN5214		
Q510	8-729-028-36	TRANSISTOR	FX507-TL1		
Q511	8-729-420-20	TRANSISTOR	XN4312		
		< RESISTOR >			
R301	1-216-827-11	METAL CHIP	3.3K	5%	1/16W
R303	1-216-836-11	METAL CHIP	18K	5%	1/16W
R304	1-218-290-11	METAL GLAZE	6.2K	5%	1/16W
R305	1-216-817-11	METAL CHIP	470	5%	1/16W
R306	1-216-835-11	METAL CHIP	15K	5%	1/16W
R307	1-216-838-11	METAL CHIP	27K	5%	1/16W
R308	1-216-841-11	METAL CHIP	47K	5%	1/16W
R309	1-216-841-11	METAL CHIP	47K	5%	1/16W
R310	1-216-833-11	METAL CHIP	10K	5%	1/16W
R311	1-216-841-11	METAL CHIP	47K	5%	1/16W
R312	1-216-841-11	METAL CHIP	47K	5%	1/16W
R313	1-216-857-11	METAL CHIP	1M	5%	1/16W
R314	1-218-885-11	METAL CHIP	39K	0.50%	1/16W
R315	1-216-825-11	METAL CHIP	2.2K	5%	1/16W
R316	1-218-897-11	METAL CHIP	120K	0.50%	1/16W
R317	1-216-844-11	METAL CHIP	82K	5%	1/16W
R318	1-216-845-11	METAL CHIP	100K	5%	1/16W
R320	1-216-844-11	METAL CHIP	82K	5%	1/16W
R321	1-216-844-11	METAL CHIP	82K	5%	1/16W
R322	1-216-833-11	METAL CHIP	10K	5%	1/16W
					(TRV11/TRV21)
R323	1-216-833-11	METAL CHIP	10K	5%	1/16W
					(TRV11E/TRV21E)
R324	1-216-841-11	METAL CHIP	47K	5%	1/16W
R325	1-216-835-11	METAL CHIP	15K	5%	1/16W
R326	1-216-833-11	METAL CHIP	10K	5%	1/16W
R327	1-216-833-11	METAL CHIP	10K	5%	1/16W
R328	1-216-837-11	METAL CHIP	22K	5%	1/16W
R329	1-216-857-11	METAL CHIP	1M	5%	1/16W
R330	1-216-833-11	METAL CHIP	10K	5%	1/16W
R331	1-216-857-11	METAL CHIP	1M	5%	1/16W
R332	1-216-843-11	METAL CHIP	68K	5%	1/16W
R333	1-216-837-11	METAL CHIP	22K	5%	1/16W
R334	1-216-843-11	METAL CHIP	68K	5%	1/16W
R335	1-216-841-11	METAL CHIP	47K	5%	1/16W
R336	1-216-833-11	METAL CHIP	10K	5%	1/16W
R338	1-216-829-11	METAL CHIP	4.7K	5%	1/16W
R339	1-216-833-11	METAL CHIP	10K	5%	1/16W

Note:	Note:
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

Ref. No.	Part No.	Description				Remarks
R340	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R341	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R342	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R345	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R346	1-218-883-11	METAL CHIP	33K	0.50%	1/16W	
R347	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R348	1-216-842-11	METAL CHIP	56K	5%	1/16W	
R349	1-216-789-11	METAL CHIP	2.2	5%	1/16W	
R350	1-216-850-11	METAL CHIP	270K	5%	1/16W	
R352	1-218-883-11	METAL CHIP	33K	0.50%	1/16W	
R355	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R357	1-216-841-11	METAL CHIP	47K	5%	1/16W	
R358	1-216-836-11	METAL CHIP	18K	5%	1/16W	
R359	1-216-864-11	METAL CHIP	0	5%	1/16W	
R361	1-216-864-11	METAL CHIP	0	5%	1/16W	
R501	1-216-849-11	METAL CHIP	220K	5%	1/16W	
R502	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R504	1-218-863-11	METAL CHIP	4.7K	0.50%	1/16W	
R505	1-218-883-11	METAL CHIP	33K	0.50%	1/16W	
R506	1-216-816-11	METAL CHIP	390	5%	1/16W	
R507	1-216-835-11	METAL CHIP	15K	5%	1/16W	
R508	1-216-832-11	METAL CHIP	8.2K	5%	1/16W	
R509	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R510	1-216-819-11	METAL CHIP	680	5%	1/16W	
R511	1-216-813-11	METAL CHIP	220	5%	1/16W	
R512	1-218-879-11	METAL CHIP	22K	0.50%	1/16W	
R513	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R514	1-218-875-11	METAL CHIP	15K	0.50%	1/16W	
R515	1-216-819-11	METAL CHIP	680	5%	1/16W	
R516	1-216-298-00	METAL CHIP	2.2	5%	1/10W	
R517	1-216-839-11	METAL CHIP	33K	5%	1/16W	
R519	1-216-818-11	METAL CHIP	560	5%	1/16W	
R520	1-218-867-11	METAL CHIP	6.8K	0.50%	1/16W	
R521	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R522	1-218-881-11	METAL CHIP	27K	0.50%	1/16W	
R523	1-216-818-11	METAL CHIP	560	5%	1/16W	
R524	1-216-846-11	METAL CHIP	120K	5%	1/16W	
R525	1-216-829-11	METAL CHIP	4.7K	5%	1/16W	
R526	1-218-865-11	METAL CHIP	5.6K	0.50%	1/16W	
R527	1-218-849-11	METAL CHIP	1.2K	0.50%	1/16W	
R528	1-218-843-11	METAL CHIP	680	0.50%	1/16W	
R529	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R530	1-216-051-00	METAL CHIP	1.2K	5%	1/10W	
R531	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R532	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R533	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R534	1-216-810-11	METAL CHIP	120	5%	1/16W	
R535	1-216-845-11	METAL CHIP	100K	5%	1/16W	
R536	1-216-833-11	METAL CHIP	10K	5%	1/16W	
R537	1-216-837-11	METAL CHIP	22K	5%	1/16W	
R538	1-216-820-11	METAL CHIP	820	5%	1/16W	
R539	1-216-864-11	METAL CHIP	0	5%	1/16W	
R540	1-216-821-11	METAL CHIP	1K	5%	1/16W	

< VARIABLE RESISTOR >

Ref. No.	Part No.	Description
RV301	1-223-733-21	RES, VAR, CARBON 10K (BRIGHT)

< SWITCH >

Ref. No.	Part No.	Description
S301	1-762-442-21	SWITCH, ROTARY (PROGRAM AE)
S302	1-572-467-21	SWITCH, PUSH (1 KEY)

< TRANSFORMER >

Ref. No.	Part No.	Description
⚠T501	1-429-459-21	TRANSFORMER, DC-DC CONVERTER
⚠T502	1-429-547-11	TRANSFORMER, INVERTER

A-7072-859-A SD-21 BOARD, COMPLETE (TRV11/TRV21)
****
A-7072-861-A SD-21P BOARD, COMPLETE (TRV11E/TRV21E)
****
(Ref.No.8,000 Series)

< CAPACITOR >

Ref. No.	Part No.	Description				Remarks
C101	1-164-217-11	CERAMIC CHIP	150PF	5%	50V	
C102	1-164-505-11	CERAMIC CHIP	2.2uF		16V	
C103	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C107	1-164-346-11	CERAMIC CHIP	1uF		16V	
C108	1-135-259-11	TANTAL. CHIP	10uF	20%	6.3V	
C109	1-162-969-11	CERAMIC CHIP	0.0068uF	10%	25V	
C110	1-164-471-11	CERAMIC CHIP	680PF	5%	50V	
C114	1-104-752-11	TANTAL. CHIP	33uF	20%	6.3V	
C116	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C117	1-135-180-21	TANTALUM CHIP	3.3uF	20%	6.3V	
C118	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	
C121	1-164-471-11	CERAMIC CHIP	680PF	5%	50V	(TRV11E/TRV21E)
C124	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TRV11E/TRV21E)
C125	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TRV11E/TRV21E)
C126	1-165-176-11	CERAMIC CHIP	0.047uF	10%	16V	
C127	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C128	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TRV11E/TRV21E)
C129	1-162-970-11	CERAMIC CHIP	0.01uF	10%	25V	(TRV11E/TRV21E)
C130	1-107-826-11	CERAMIC CHIP	0.1uF	10%	16V	
C131	1-162-922-11	CERAMIC CHIP	39PF	5%	50V	(TRV11E/TRV21E)
C134	1-162-913-11	CERAMIC CHIP	8PF	0.5PF	50V	

Note:	**Note:**
The components identified by matk ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified	Les composants identifiés par une marque ⚠ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifie.

SD-21

Ref. No.	Part No.	Description		Remarks
C136	1-163-077-00	CERAMIC CHIP	0.1uF	10% 25V (TRV11/TRV21)
C136	1-162-568-11	CERAMIC CHIP	0.33uF	10% 16V (TRV11E/TRV21E)
C137	1-163-077-00	CERAMIC CHIP	0.1uF	10% 25V (TRV11/TRV21)
C137	1-162-568-11	CERAMIC CHIP	0.33uF	10% 16V (TRV11E/TRV21E)
C138	1-163-077-00	CERAMIC CHIP	0.1uF	10% 25V (TRV11/TRV21)
C138	1-162-568-11	CERAMIC CHIP	0.33uF	10% 16V (TRV11E/TRV21E)
C139	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C140	1-104-913-11	TANTAL. CHIP	10uF	20% 16V
C141	1-162-970-11	CERAMIC CHIP	0.01uF	10% 25V
C143	1-135-333-11	TANTAL. CHIP	1uF	20% 16V

< CONNECTOR >

CN101	1-766-346-21	CONNECTOR, FFC/FPC 16P		
CN102	1-770-625-21	PIN, CONNECTOR 8P		

< DIODE >

D102	8-713-102-80	DIODE	1T369-01-T8A	(TRV11E/TRV21E)

< IC >

IC101	8-759-355-92	IC	AK9813AF-E2	
IC102	8-759-374-36	IC	IR3Y29A4	

< COIL >

L101	1-412-030-11	INDUCTOR CHIP	22uH	
L104	1-412-956-21	INDUCTOR	27uH	(TRV11E/TRV21E)

< TRANSISTOR >

Q102	8-729-420-24	TRANSISTOR	2SB1218A-QRS	
Q103	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q104	8-729-230-63	TRANSISTOR	2SC4116-YG	
Q105	8-729-403-27	TRANSISTOR	XN4401	

< RESISTOR >

R101	1-216-819-11	METAL CHIP	680	5% 1/16W
R102	1-216-849-11	METAL CHIP	220K	5% 1/16W
R103	1-216-818-11	METAL CHIP	560	5% 1/16W
R110	1-216-818-11	METAL CHIP	560	5% 1/16W
R111	1-216-817-11	METAL CHIP	470	5% 1/16W
R112	1-216-818-11	METAL CHIP	560	5% 1/16W
R113	1-216-839-11	METAL CHIP	33K	5% 1/16W
R115	1-216-845-11	METAL CHIP	100K	5% 1/16W
R116	1-218-877-11	METAL CHIP	18K	0.50% 1/16W
R117	1-216-851-11	METAL CHIP	330K	5% 1/16W
R119	1-216-833-11	METAL CHIP	10K	5% 1/16W
R120	1-216-844-11	METAL CHIP	82K	5% 1/16W
R121	1-216-855-11	METAL CHIP	680K	5% 1/16W
R122	1-216-839-11	METAL CHIP	33K	5% 1/16W
R123	1-216-840-11	METAL CHIP	39K	5% 1/16W
R124	1-216-847-11	METAL CHIP	150K	5% 1/16W
R128	1-216-864-11	METAL CHIP	0	5% 1/16W
R129	1-216-851-11	METAL CHIP	330K	5% 1/16W
R130	1-216-837-11	METAL CHIP	22K	5% 1/16W
R131	1-216-833-11	METAL CHIP	10K	5% 1/16W
R132	1-220-397-11	METAL GLAZE	4.7M	5% 1/16W (TRV11E/TRV21E)
R133	1-216-840-11	METAL CHIP	39K	5% 1/16W (TRV11E/TRV21E)
R134	1-216-840-11	METAL CHIP	39K	5% 1/16W (TRV11E/TRV21E)
R135	1-216-845-11	METAL CHIP	100K	5% 1/16W
R136	1-216-821-11	METAL CHIP	1K	5% 1/16W
R137	1-218-881-11	METAL CHIP	27K	0.50% 1/16W
R138	1-218-889-11	METAL CHIP	56K	0.50% 1/16W
R139	1-216-837-11	METAL CHIP	22K	5% 1/16W (TRV11E/TRV21E)
R140	1-216-857-11	METAL CHIP	1M	5% 1/16W
R142	1-216-830-11	METAL CHIP	5.6K	5% 1/16W (TRV11E/TRV21E)
R146	1-216-825-11	METAL CHIP	2.2K	5% 1/16W (TRV11/TRV21)
R146	1-216-819-11	METAL CHIP	680	5% 1/16W (TRV11E/TRV21E)
R147	1-216-841-11	METAL CHIP	47K	5% 1/16W (TRV11E/TRV21E)
R149	1-216-829-11	METAL CHIP	4.7K	5% 1/16W (TRV11E/TRV21E)
R150	1-216-809-11	METAL CHIP	100	5% 1/16W
R151	1-216-809-11	METAL CHIP	100	5% 1/16W
R152	1-216-809-11	METAL CHIP	100	5% 1/16W
R154	1-216-839-11	METAL CHIP	33K	5% 1/16W
R155	1-216-840-11	METAL CHIP	39K	5% 1/16W
R156	1-216-837-11	METAL CHIP	22K	5% 1/16W (TRV11/TRV21)
R157	1-216-843-11	METAL CHIP	68K	5% 1/16W (TRV11/TRV21)
R157	1-216-864-11	METAL CHIP	0	5% 1/16W (TRV11E/TRV21E)
R158	1-216-832-11	METAL CHIP	8.2K	5% 1/16W
R159	1-216-830-11	METAL CHIP	5.6K	5% 1/16W

< VIBRATOR >

X101	1-579-661-21	OSCILLATOR, CRYSTAL	4.43MHz	(TRV11E/TRV21E)
X101	1-579-466-11	VIBRATOR, CRYSTAL	3.58MHz	(TRV11/TRV21)

(Page 6-28)

21. LCD system adjustments (PD-67 board)

Note 1: The backlight (fluorescent lamp is driven by high voltage AC power supply.
Therefore, be careful not to touch the back light holder with hand or you will receive an electric shock.

Note 2: When replacing the LCD unit, be careful not to damage the LCD unit with static electricity.

Note 3: Set the BRIGHT knob to the center click position.

[Adjustment connector]

Most measurement points of the LCD adjustment are concentrated at the CN301 of the PD-67 board. Connect the measuring equipment to CN301 via the measuring pin tool. The following table shows the pin numbers and signal names of CN301.

Pin No.	Signal Name	Pin No.	Signal Name
1	VR	2	VG
3	VB	4	HSY
5	GND	6	SPD
7	SYNC	8	COM-O
9	+7.5V		

1. Multi CPC Parts code:J-6082-311-A
2. Aligment tape
   NTSC (CCD-TRV11/TRV21) :
   WR5-4NL (8-967-995-51)
   PAL (CCD-TRV11E/TRV21E) :
   WR5-4CL (8-967-995-56)

[Video input signal for adjustment]

If the signal column specifies the "Color bar signal with chroma and burst signals switched OFF", input the color bar signal with chroma and burst signals are switched OFF. Confirm that the signal level at SD-21 board CN102 pin ⑦ has 1.00Vp-p before starting adjustment.

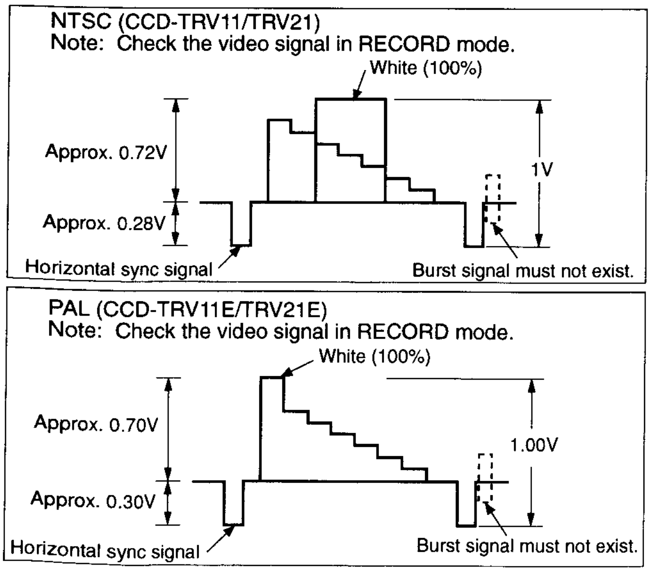


Fig. 6-1-13 Color bar signal with chroma and burst signals switched OFF.

[Power supply voltage adjustment]

Adjust the power supply voltage to be input to the battery terminal so that the voltage across PD-67 board CN303 pins ⑩ (LCD UNREG) and pins ⑪ or ⑫ (UNREG GND) is 6.5 ± 0.1Vdc.

Power supply voltage check (PD-67, SD-21 boards)

Subject	Any subject
Measuring equipment	Digital voltmeter
DAC 3.1V check	
Measurement point	CN102 Pin ⑤ (SD-21)
Specification	3.1±0.1Vdc (GND : CN102 Pin ⑥)
LCD 4.9V check	
Measurement point	CN303 Pin ⑥ (PD-67)
Specification	4.85±0.05Vdc (GND : CN303 Pin ⑦)
LCD UNREG check	
Measurement point	CN303 Pin ⑩ (PD-67)
Specification	6.5±0.1Vdc (GND : CN303 Pin⑪ or ⑫)

21-1. EVR initial data input

Mode	Stop
Signal	Any signal
Adjustment page	F

Note : Do not rewrite the EE PROM data except when it is necessary such as replacement of SD-21 board IC101.

Adjustment procedure:

( ) : CCD-TRV11E/TRV21E

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8	3C	After setting the data, press the PAUSE button.
		D9	94(74)	
		DA	8C(61)	
		DB	6E	
		DC	68	
		DD	A7	
		DE	64	
		DF	38	
		E0	67	
		E1	50	
		E2	48	
		E3	80	
3	6	00	00	After setting the data, press the PAUSE button. (End)

21-2. VCO adjustment

Purpose: Sets the VCO free-run frequency.

Adjustment Error: Incorrect picture on EVF

( ) : CCD-TRV11E/TRV21E

Mode	Stop
Signal	No signal
Measurement point	PD-67 board CN301 pin ④ (HSY)
Measuring equipment	Frequency counter
Adjustment page	F
Adjustment address	DE
Specification	f=15734±30Hz (15625±30Hz)

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Remove C107 (1μF capacitor) (SD-21 board)
2				Press the DATA SCREEN button of the remote commander to disappear the display.
3	6	00	01	After setting the data, press the PAUSE button. (Preparation)
4	F	DE		Change data using the PLAY and STOP buttons until the oscillating frequency satisfies the specification.
5				Press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)
7				Connect C107 (1μF capacitor) (SD-21 board)

21-3. Horizontal display position adjustment

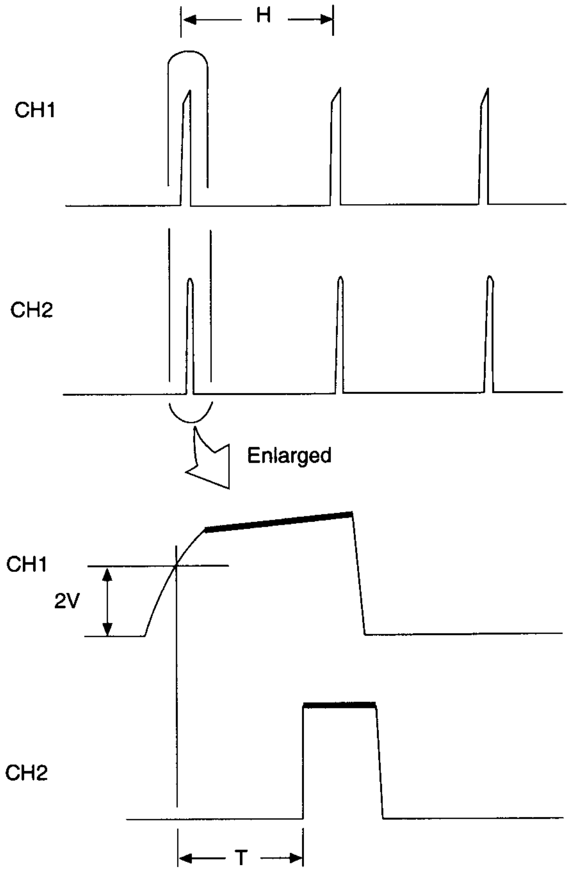
Purpose: Adjusts the horizontal position of picture on LCD display.

Adjustment Error: Picture position will be shifted left or right.

( ) : CCD-TRV11E/TRV21E

Mode	Stop
Signal	Color bar signal
Measurement point	CH1: PD-67 board CN301 pin ⑦ (SYNC) CH2: PD-67 board CN301 pin ⑥ (SPD)
Measuring equipment	Oscilloscope
Adjustment page	F
Adjustment address	E2
Specification	T=1.2±0.1μsec (1.6 ±0.1μsec)

Note: Set the LCD so that it is directed toward the lens. (The waveform is different depending upon direction.)



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E2		Change data using the PLAY and STOP button until the delay time "T" satisfies the specification.
3				After setting the data, press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-4. D RANGE adjustment

Purpose : Adjust to the proper LCD panel driving dynamic range.

Adjustment Error : Image will be saturated (whitish) or blackish.

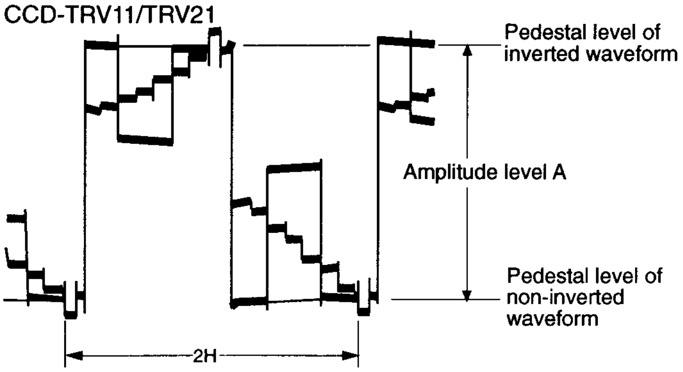
Mode	Playback
Signal	Color bar signal with chroma and burst signal switched OFF.
Measuremant Point	PD-67 board CN301 Pin ② (VG)
Measuring Instrument	Oscilloscope External trigger: CN301 Pin④
Adjustment Page	F
Adjustment Address	E0
Specfied Value	A=3.80 ± 0.05Vp-p

Note : Check that the BRIGHT Knob is set to the center click position.

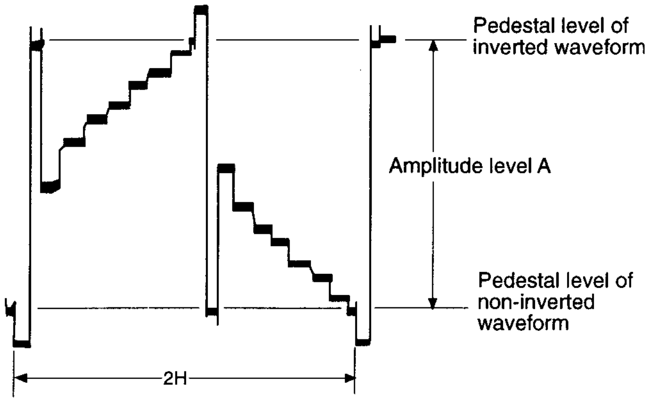
Adjustment procedure :

Oder	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E0		Change the data of page : F address : E0, and adjust the amplitude level (A) of the VG signal to the specified value. Amplitude : Level difference between the reverse waveform pedestal and non-reversed waveform pedestal.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

CCD-TRV11/TRV21


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

CCD-TRV11E/TRV21E


Pedestal level of inverted waveform
Amplitude level A
Pedestal level of non-inverted waveform
2H

21-5. CONTRAST adjustment

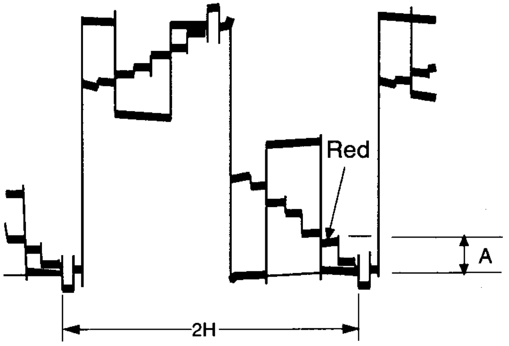
Purpose: Adjusts contrast of LCD picture

Adjustment Error: Details of black will be lost, or white saturated/black compressed picture.

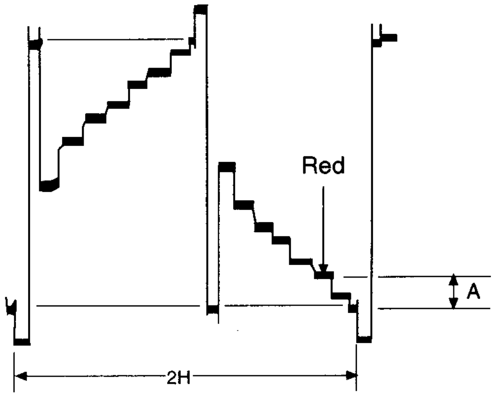
Mode	Playback
Signal	Color bar signal with chroma and burst signals switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	DD
Specification	A=1.55±0.05Vp-p

Note: Check that the BRIGHT knod is set to the center click position.

CCD-TRV11/TRV21

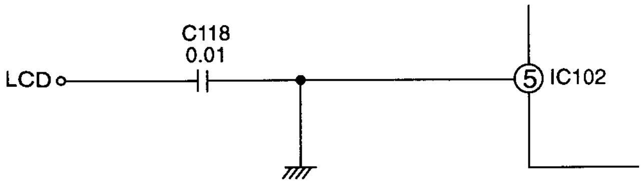


CCD-TRV11E/TRV21E



Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Remove C118 (0.01μF capacitor) (SD-21 board)
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3	F	DD		Change data using the PLAY and STOP buttons until the amplitude (A) has the specification value.
4				Press the PAUSE button.
5	6	00	00	After setting the data, press the PAUSE button. (End)
6				Connect C118 (0.01μF capacitor) (SD-21 board)



★ If chroma input must be cut-off, either remove C118 or short C118-IC102 pin ⑤ to GND before adjustment.

21-6. BRIGHT adjustment

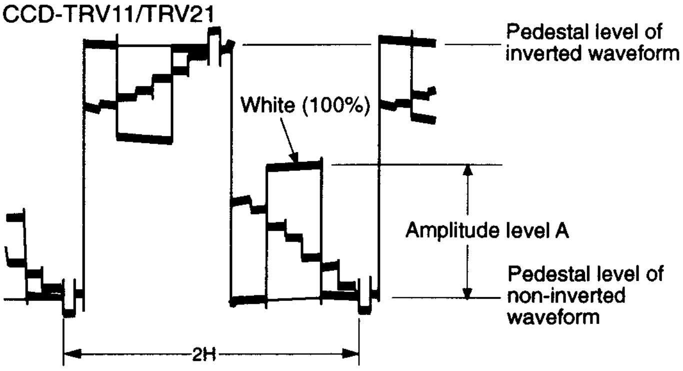
Purpose: Adjusts video signal level to drive the LCD panel.

Adjustment Error: Picture on LCD will be white saturated or black compressed.

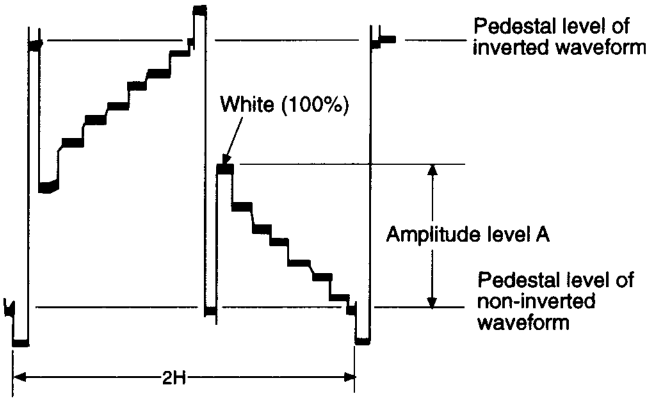
Mode	Playback
Signal	Color bar signal with the chroma and burst signal switched OFF.
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	D8
Specification	A=3.20±0.05Vp-p

Note: Check that the BRIGHT knob is set to the center click position.

CCD-TRV11/TRV21


Pedestal level of inverted waveform
White (100%)
Amplitude level A
Pedestal level of non-inverted waveform
2H

CCD-TRV11E/TRV21E


Pedestal level of inverted waveform
White (100%)
Amplitude level A
Pedestal level of non-inverted waveform
2H

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D8		Change data using the PLAY and STOP buttons until the VG signal amplitude (A) has the specification value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-7. V-COM level adjustment

Purpose: Set to contrast of the image.

Adjustment Error: Image will be blue (whitish) or saturated.

( ) : CCD-TRV11E/TRV21E

Mode	STOP or Playback
Signal	Color bar signal with chroma and burst signals switched OFF
Measurement point	PD-67 board CN301 Pin ⑧ (COM-O)
Measuring equipment	Oscilloscope
Adjustment page	F
Adjustment address	E1
Specification	A=8.20 ± 0.05Vp-p (A=8.70 ± 0.05Vp-p)

Note : Check that the BRIGHT knob is set to center click position.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	E1		Change the data of page : F, address : E1, and adjust the V-COM level (A) to the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

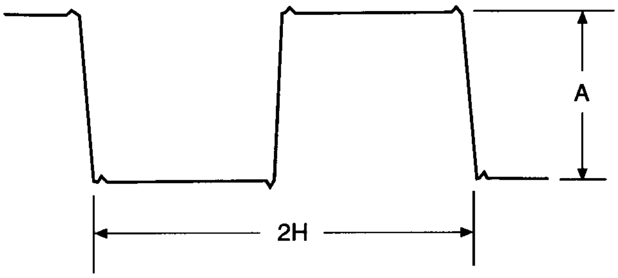


Fig. 6-3-6

21-8. COLOR adjustment

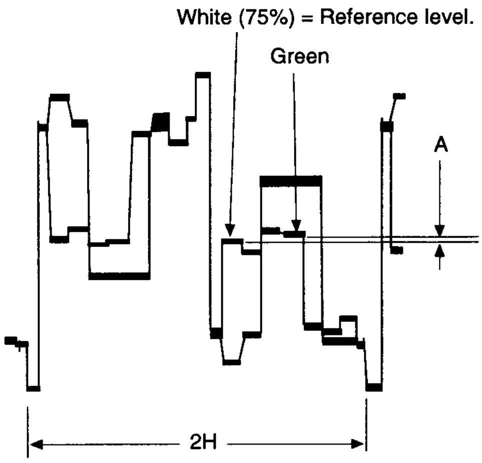
Purpose: Adjusts color for standard level.

Adjustment Error: Color will be too much or too small.

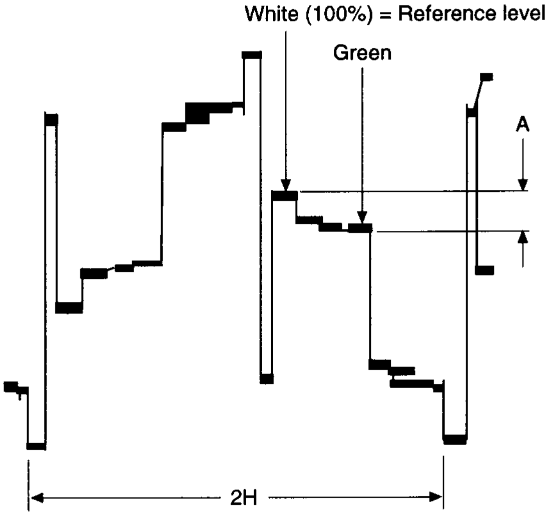
( ) : CCD-TRV11E/TRV21E

Mode	Playback
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	D9
Specification	A=0 ± 0.05Vp-p (–0.25 ± 0.05Vp-p)

CCD-TRV11/TRV21



CCD-TRV11E/TRV21E



Adjustment procedure:

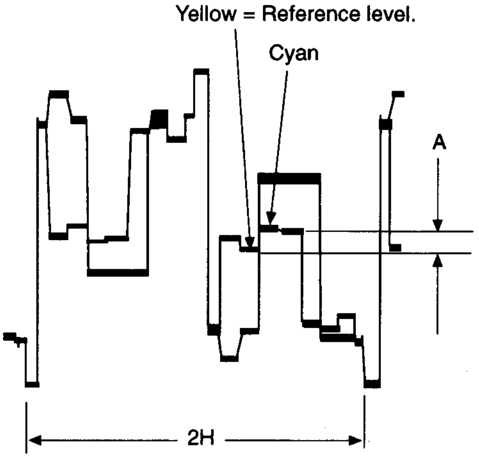
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	D9		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-9. HUE adjustment (CCD-TRV11/TRV21)

Purpose: Adjust for standard hue.

Adjustment Error: Unnatural hue.

Mode	Playback
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ② (VG)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	DA
Specification	A=0 ± 0.05Vp-p



Adjustment procedure:

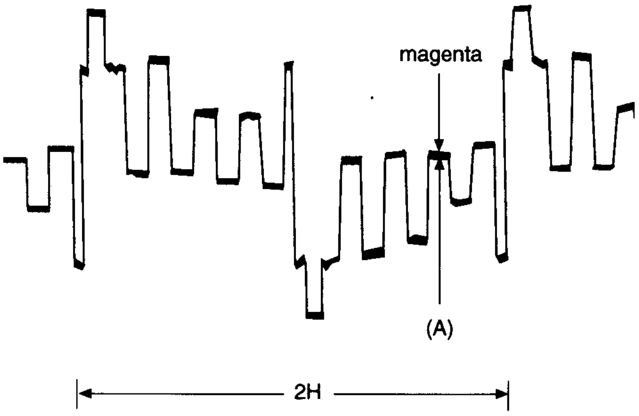
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DA		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-10. BURST CLEANING adjustment (CCD-TRV11E/TRV21E)

Purpose: Adjust for standard hue.

Adjustment Error: Unnatural hue.

Mode	Playback
Signal	Color bar signal (with chroma and burst signals)
Measurement point	PD-67 board CN301 pin ③ (VB)
Measuring equipment	Oscilloscope [External trigger: CN301 pin ④ (HSY)]
Adjustment page	F
Adjustment address	DA
Specification	Minimum amplitude of the flicker of the magenta position.



Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DA		Change data using the PLAY and STOP buttons until the amplitude (A) has the specified value.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

21-11. V-COM adjustment

Purpose:	Adjusts for correct voltage of the DC bias voltage of the common electrode signal of the LCD panel.
Adjustment Error:	Details of the LCD picture will be lost. Flicker occurs easily. Vertical stripes will appear.

( ) : CCD-TRV11E/TRV21E

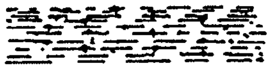
Mode	Playback PAUSE
Signal	Alignment tape: color bar for operation check segment WR5-4NL (WR5-4CL)
Measurement point	To be confirmed on LCD display
Measuring equipment	
Adjustment page	F
Adjustment address	DF

Adjustment procedure:

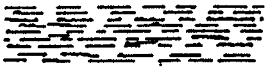
Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2				Establish the PB PAUSE state using operation keys of the camera.
3	F	DF		Change data using the PLAY and STOP buttons of the adjustment remote commander and observe the noise bar portion. Find the noise bar showing noise similar to head clogging. Keep pressing the PLAY button until black dots can be seen clearly. This data is D_A. Then keep pressing the STOP button until black dots can be seen clearly. This data is D_B.
4				Convert the D_A and D_B to the decimal value which are D_A' and D_B'. (Refer to Service manual page 6-12) [Conversion Table between hexadecimal and decimal values]. Then calculate D_C' using the equation $D_C' = (D_A' + D_B') \div 2$
5	F	DF		Set data to D_C and press the PAUSE button.
6	6	00	00	After setting the data, press the PAUSE button. (End)

Note: This adjustment must be executed after the BRIGHT and CONTRAST adjustments are completed.

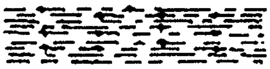
Keep pressing the PLAY button.

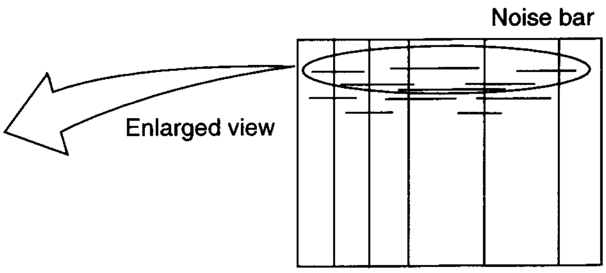


Find the noise bar showing noise similar to head clogging.



Keep pressing the STOP button.





21-12. White balance adjustment

Purpose: Adjust for correct white balance.

Adjustment Error: Color reproduction on LCD display will be poor.

Mode	Record
Signal	Color bar signal with chroma and burst signals switched OFF
Measurement point	To be confirmed on LCD display
Measuring equipment	
Adjustment page	F
Adjustment address	DB DC
Specification	Image on the LCD display must not have any color.

Note1: Start adjustment within 30±5 seconds after the back-light turns ON.

Note2: During adjustment, the LCD protection film must be peeled off.

Adjustment procedure:

Order	Page	Address	Data	Procedure
1	6	00	01	After setting the data, press the PAUSE button. (Preparation)
2	F	DB DC		Change the DB and DC data using the PLAY and STOP buttons until the image on the LCD display has no color.
3				Press the PAUSE button.
4	6	00	00	After setting the data, press the PAUSE button. (End)

CCD-TRV11/TRV11E/
TRV21/TRV21E/TRV21PK
RMT-713

SONY

SERVICE MANUAL

US Model
Canadian Model
CCD-TRV11/TRV21
AEP Model
UK Model
CCD-TRV11E/TRV21E
E Model
CCD-TRV11/TRV11E/TRV21/
TRV21E/TRV21PK
Australian Model
CCD-TRV11E
Hong Kong Model
CCD-TRV11/TRV11E
Tourist Model
CCD-TRV21/TRV21E

SUPPLEMENT-3

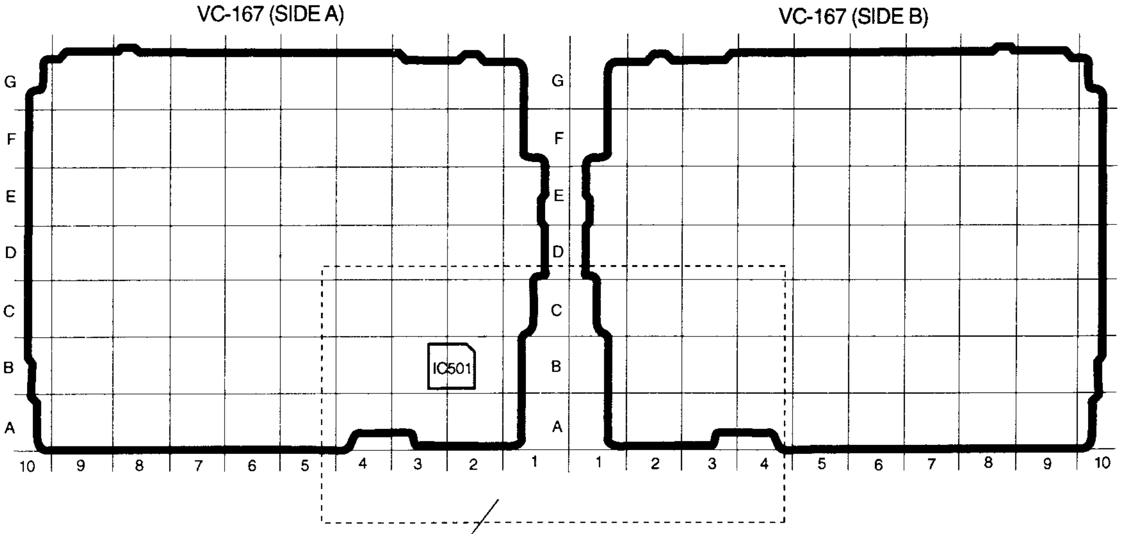
File this supplement with the Service Manual.
(96-040)

1. Information related to the newly added types of IC (IC501 AFM PROCESS) used in the audio block of the VC-167 board.
2. Correction of flange back adjustment.
3. Change of the DD-80 board Zoom SW to outside the board.
4. Correction of LCD system adjustments (PD-67 board).

VC-167 BOARD

C501	(A)A-2
C502	(A)A-2
C503	(A)A-2
C504	(B)B-2
C505	(B)A-2
C506	(A)A-2
C507	(A)A-2
C508	(A)A-2
C509	(A)A-3
C511	(A)A-3
C512	(A)A-2
C513	(A)A-3
C514	(B)A-2
C515	(A)A-3
C516	(A)A-3
C517	(A)A-2
C518	(A)A-2
C519	(A)A-3
C520	(B)C-2
C521	(B)B-2
C522	(B)B-3
C523	(B)B-2
C525	(B)A-2
C526	(A)B-1
C527	(B)B-3
C528	(A)A-2
C529	(A)B-2
C530	(B)B-3
C531	(A)C-1
C532	(B)B-3
C533	(A)B-3
C534	(B)B-3
C535	(B)B-2
C536	(B)B-3
C537	(B)B-2
C538	(B)A-3
C539	(B)B-3
C540	(B)C-2
C541	(B)C-2
C542	(A)C-1
C543	(A)C-2
C544	(B)B-2
C545	(B)B-2
C546	(B)C-1
C548	(B)C-2
C549	(B)C-2
C550	(B)A-2
C551	(A)C-1
C552	(A)C-1
C553	(A)C-1
C554	(A)C-1
C555	(A)C-2
C556	(A)C-2
C557	(A)C-3
C558	(B)C-2
C561	(B)A-2
C563	(A)A-1
C564	(A)C-2
C565	(A)C-2
C567	(B)C-2
C568	(B)A-2
CN501	(B)B-1
IC501	(A)B-2
Q501	(B)A-2
Q503	(A)A-2
Q504	(B)A-2
Q506	(A)A-2
Q507	(B)A-2
Q510	(B)C-2
Q511	(B)C-2
R501	(A)A-3
R502	(A)A-2
R503	(A)C-6
R505	(B)A-2
R506	(A)C-6
R507	(A)A-2
R511	(B)B-3
R512	(A)C-2
R513	(B)B-3
R514	(B)C-2
R515	(A)C-2
R516	(A)C-6
R517	(B)C-2
R519	(A)A-3
R520	(A)C-2
R522	(B)A-2
R523	(A)B-3
R525	(A)C-1
R526	(A)A-2
R527	(B)A-1
R528	(B)A-2
R529	(B)A-2
R530	(B)A-2
R531	(B)A-1
R532	(B)A-1
R533	(B)B-2
R534	(B)B-2
R535	(B)C-6
R536	(B)A-2
R537	(A)B-2
R538	(B)A-2
R556	(B)A-1
R557	(B)A-2
R558	(A)A-2
R560	(B)B-3

Location of printed wiring board



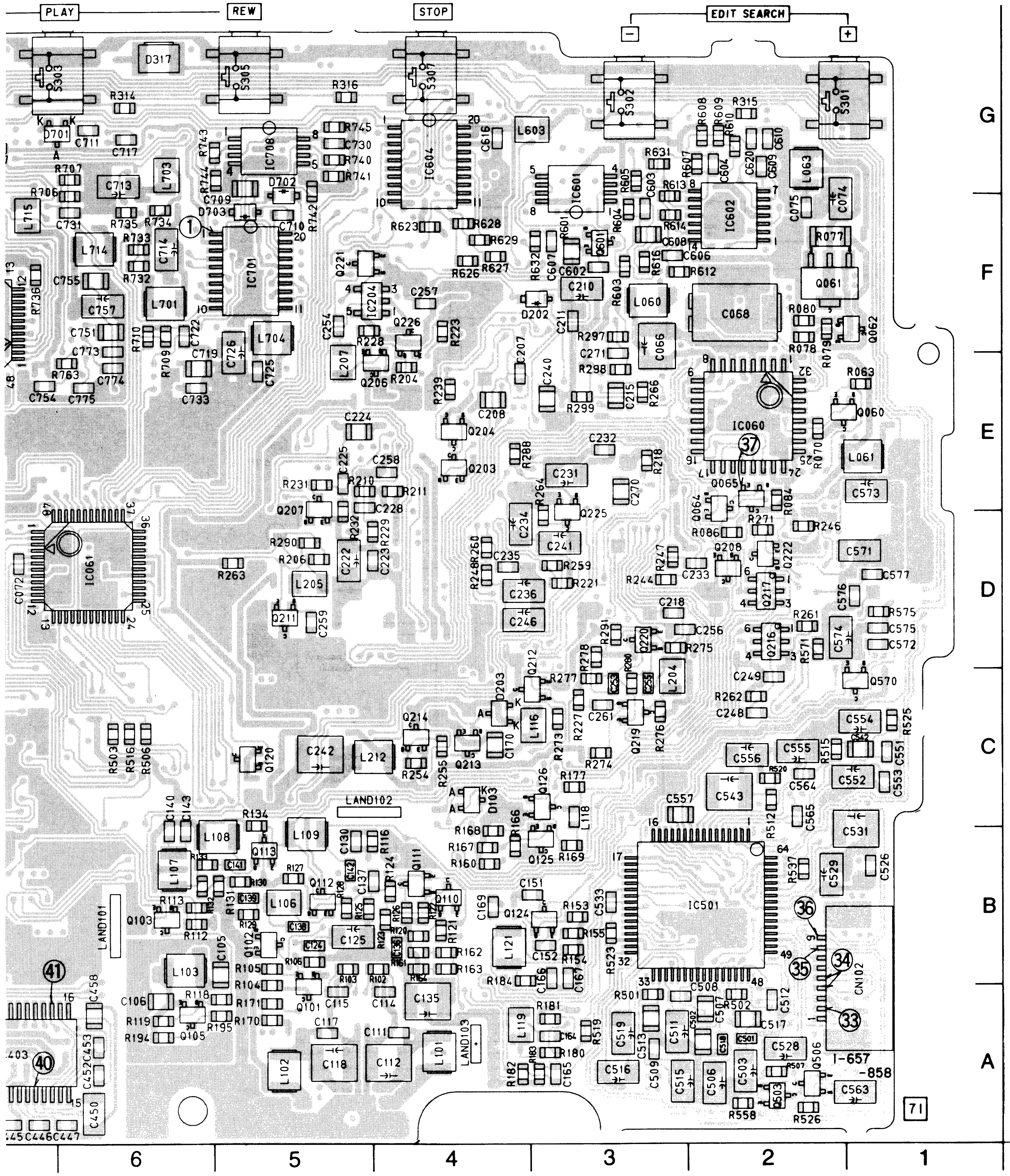
This area.

VC-167 (MAIIN) PRINTED WIRING BOARD

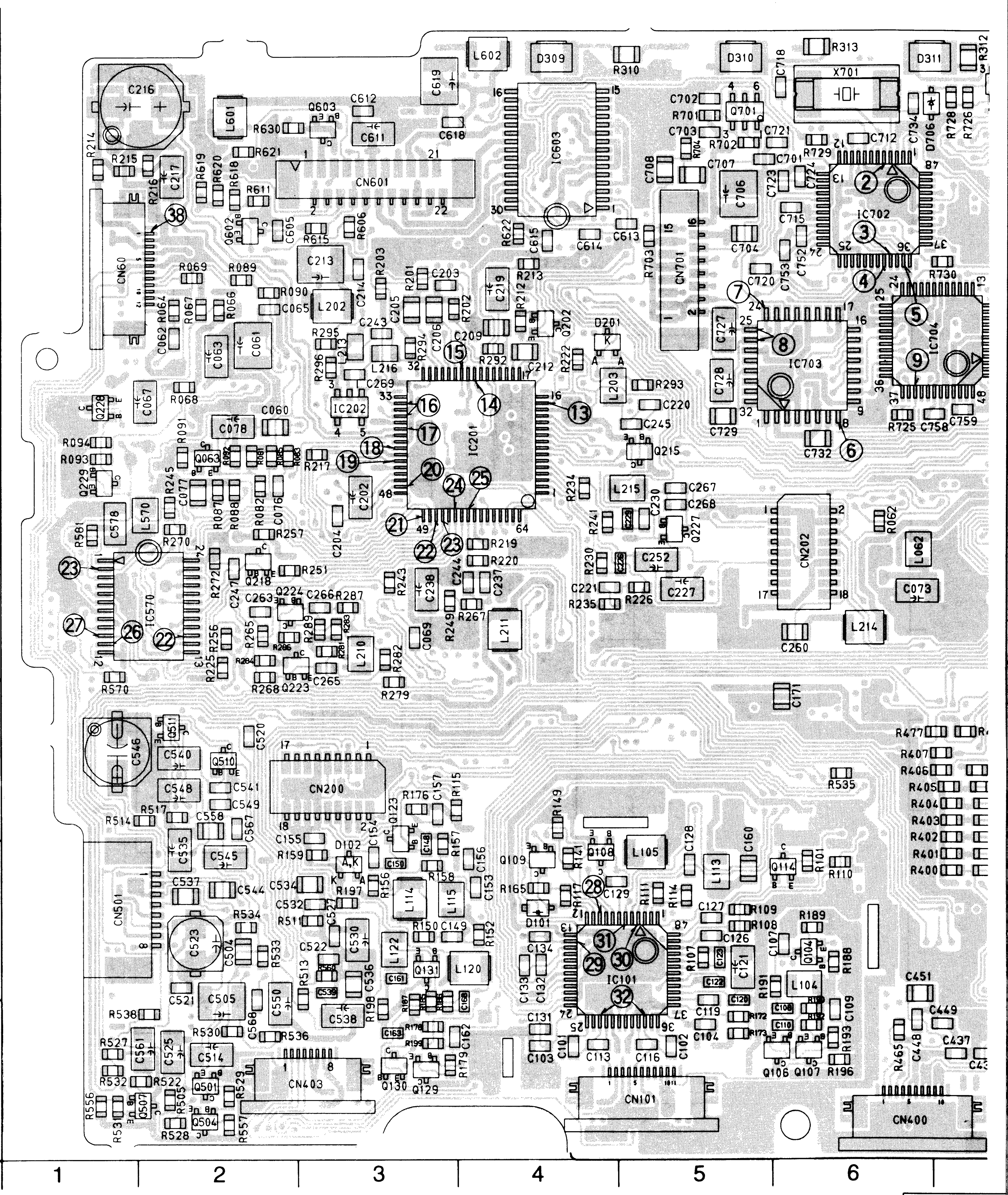
— Ref. No. : VC-167 Board; 1,000 Series —

There are few cases that the part printed on this diagram isn't mounted in this model.

VC-167 BOARD (SIDE A)


PLAY
REW
STOP
EDIT SEARCH
−
+
S303
S305
S307
S302
S301
IC708
IC701
IC604
IC601
IC602
IC204
IC060
IC061
IC501
CN102
Q061
LAND101
LAND102
LAND103
1-657
-858
71
G
F
E
D
C
B
A
6
5
4
3
2
1

VC-167 BOARD (SIDE B)


C216
IC603
CN601
IC702
IC703
IC704
CN701
X701
CN60
IC202
IC201
CN202
IC570
CN200
CN501
CN403
CN101
IC101
CN400
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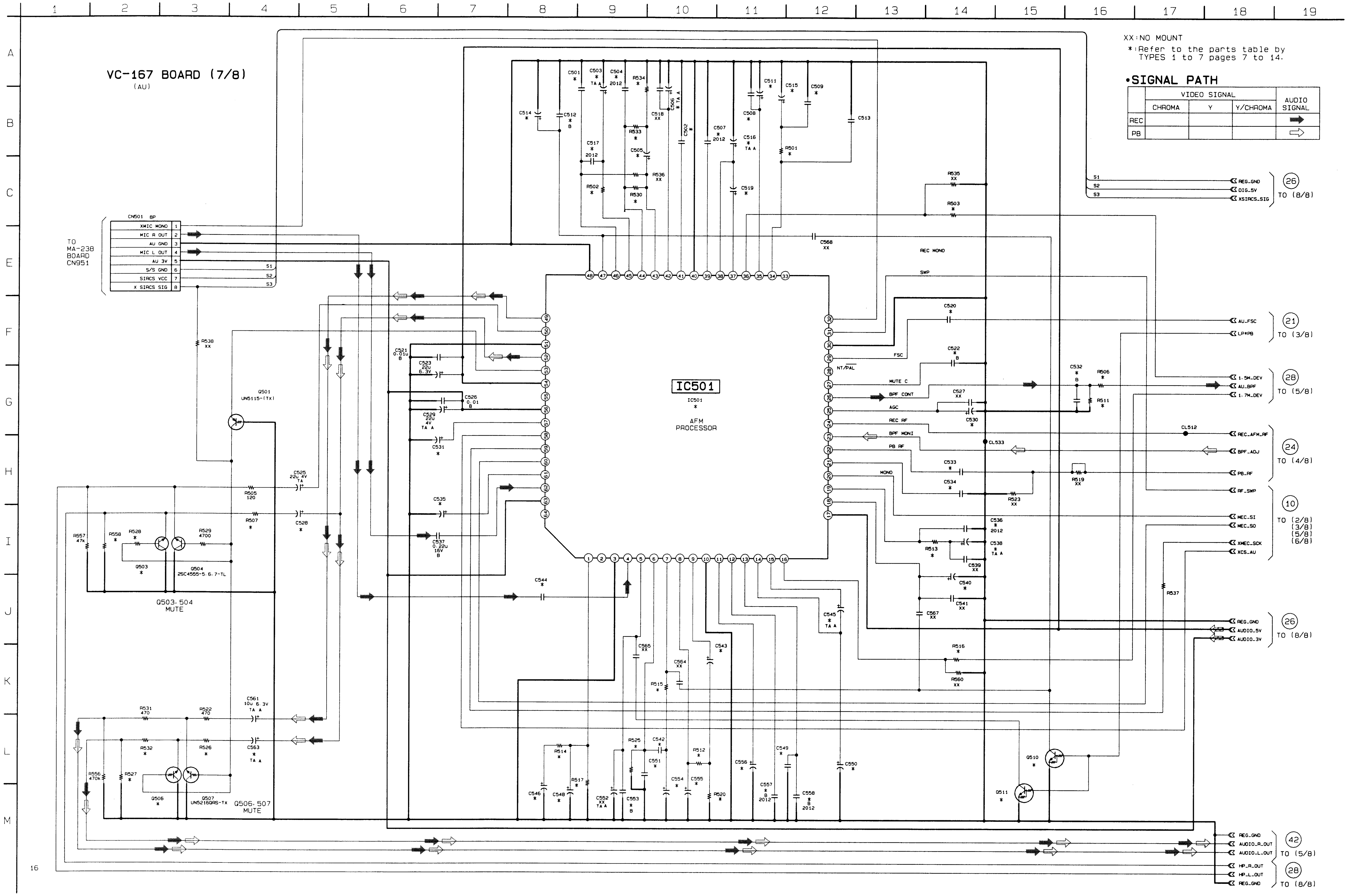
5
6

VC-167 (AUDIO) SCHEMATIC DIAGRAM

— Ref. No. : VC-167 Board; 1,000 Series —


1
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A
B
C
E
F
G
H
I
J
K
L
M
16
VC-167 BOARD (7/8)
(AU)
TO
MA-238
BOARD
CN951
CN501 8P
XMIC MONO 1
MIC R OUT 2
AU GND 3
MIC L OUT 4
AU 3V 5
S/S GND 6
SIRCS VCC 7
X SIRCS SIG 8
S1
S2
S3
R538
XX
Q501
UN5115-(TX)
IC501
IC501
*
AFM
PROCESSOR
REC MONO
SWP
FSC
NT/PAL
MUTE C
BPF CONT
AGC
REC RF
BPF MONI
PB RF
MONO
CL512
CL533
Q503
*
Q504
2SC4555-5.6.7-TL
Q503, 504
MUTE
Q506
*
Q507
UN5216QRS-TX
Q506, 507
MUTE
Q510
Q511
*
REG_GND
DIG_5V
XSIRCS_SIG
26
TO (8/8)
AU_FSC
LP*PB
21
TO (3/8)
1.5M_DEV
AU_BPF
1.7M_DEV
28
TO (5/8)
REC_AFM_RF
BPF_ADJ
PB_RF
24
TO (4/8)
RF_SWP
MEC_SI
MEC_SO
XMEC_SCK
XCS_AU
10
TO (2/8)
(3/8)
(5/8)
(6/8)
R537
REG_GND
AUDIO_5V
AUDIO_3V
26
TO (8/8)
REG_GND
AUDIO_R_OUT
AUDIO_L_OUT
42
TO (5/8)
HP_R_OUT
HP_L_OUT
REG_GND
28
TO (8/8)

XX : NO MOUNT

* : Refer to the parts table by TYPES 1 to 7 pages 7 to 14.

•SIGNAL PATH

	VIDEO SIGNAL			AUDIO SIGNAL
	CHROMA	Y	Y/CHROMA	
REC				➡
PB				⇨

ELECTRICAL PARTS LIST (The parts table showing correspondence between the used parts and the respective destination models.)

NOTE:

When indicating parts by reference number, please include the board name.

This parts list shows the parts of the AUDIO block only of the VC-167 board. Refer to the respective Service Manuals of each model for other parts.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- CAPACITORS:
  uF: μF
- RESISTORS
  All resistors are in ohms.
  METAL: metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- COILS
  uH: μH
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA...: μA... , uPA... , μPA... ,
  uPB... , μPB... , uPC... , μPC... ,
  uPD..., μPD...

Note 1 : Headphone Out MODEL only.
Note 2 : Digital Zoom MODEL only.
Note 3 : TRV (LCD) MODEL only.

⟨There are following five types depending on the AFM PROCESS IC501.⟩

TYPE 1	AN2980FH-EB	(STEREO)
TYPE 2	AN3996FHP-EB	(MONO)
TYPE 3	CXA1837R-T	(MONO)
TYPE 4	LA7457W-TB	(MONO)
TYPE 5	CXA2038R	(MONO)

×× : No mount.
← : Same as the left description.

Destination	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
Ref. No.	Part No./Description	Part No./Description	Part No./Description	Part No./Description	Part No./Description
IC501	IC AN2980FH-EB 8-759-368-08 (STEREO)	IC AN3996FHP-EB 8-759-338-93 (MONO)	IC CXA1837R-T 8-752-075-66 (MONO)	IC LA7457W-TB 8-759-368-09 (MONO)	IC CXA2038R 8-752-076-14 (MONO)
C501	××	××	××	××	××
C502	CERAMIC CHIP 0.01uF 50V 1-164-232-11	←	××	××	××
C503	××	××	××	××	××
C504	××	××	CERAMIC CHIP 1000PF 50V 1-163-009-11	××	←
C505	TANTAL. CHIP 47uF 4V 1-104-908-11	××	TANTAL. CHIP 47uF 4V 1-104-908-11	××	TANTAL. CHIP 47uF 4V 1-104-908-11
C506	TANTALUM CHIP 2.2uF 10V 1-135-149-21	××	××	××	××
C507	CERAMIC CHIP 0.47uF 16V 1-107-823-11	××	××	××	××
C508	××	××	××	CERAMIC CHIP 2200pF 50V 1-162-966-11	CERAMIC CHIP 220pF 50V 1-162-960-11
C509	××	××	××	CERAMIC CHIP 0.1uF 16V 1-107-826-11	××
C511	TANTALUM CHIP 2.2uF 10V 1-135-149-21	TANTALUM CHIP 3.3uF 6.3V 1-135-180-21	××	××	××
C512	CERAMIC CHIP 4700PF 50V 1-162-968-11	←	××	××	××
C513	××	××	CERAMIC CHIP 0.22uF 16V 1-164-489-11	CERAMIC CHIP 0.1uF 50V 1-164-004-11	←
C514	××	××	××	TANTALUM CHIP 10uF 6.3V 1-135-259-11	××
C515	TANTAL. CHIP 22uF 4V 1-104-847-11	←	TANTAL. CHIP 0.47uF 35V 1-135-145-11	××	←
C516	TANTALUM CHIP 2.2uF 10V 1-135-149-21	××	××	××	××
C517	CERAMIC CHIP 0.47uF 16V 1-107-823-11	××	××	××	××
C518	××	CERAMIC CHIP 0.01uF 25V 1-162-970-11	××	××	××
C519	××	××	××	TANTAL. CHIP 4.7uF 25V 1-135-181-21	××
C520	CERAMIC CHIP 0.01uF 25V 1-162-970-11	←	←	××	←
C521	CERAMIC CHIP 0.01uF 25V 1-162-970-11	←	←	××	←

Destination	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
Ref. No.	Part No./Description	Part No./Description	Part No./Description	Part No./Description	Part No./Description
C522	CERAMIC CHIP 0.022uF 25V 1-164-227-11	←	CERAMIC CHIP 680pF 50V 1-162-963-11	CERAMIC CHIP 0.022uF 25V 1-164-227-11	←
C523	ELECT CHIP 22uF 6.3V 1-124-778-00	←	←	←	←
C525	TANTAL. CHIP 22uF 4V 1-104-847-11 **NOTE 1**	←	←	←	←
C526	CERAMIC CHIP 0.01uF 25V 1-162-970-11	←	←	←	←
C527	××	××	××	××	××
C528	TANTAL. CHIP 22uF 4V 1-104-847-11	××	××	××	××
C529	TANTAL. CHIP 22uF 4V 1-104-847-11	←	←	←	←
C530	TANTAL. CHIP 10uF 6.3V 1-135-259-11	←	××	××	××
C531	TANTAL. CHIP 47uF 4V 1-104-908-11	TANTAL. CHIP 33uF 4V 1-104-752-11	TANTAL. CHIP 47uF 4V 1-104-908-11	TANTAL. CHIP 33uF 6.3V 1-104-752-11	TANTAL. CHIP 47uF 6.3V 1-104-908-11
C532	CERAMIC CHIP 0.01uF 25V 1-162-970-11	CERAMIC CHIP 0.1uF 16V 1-107-826-11	CERAMIC CHIP 0.01uF 25V 1-162-970-11	←	←
C533	CERAMIC CHIP 0.01uF 25V 1-162-970-11	←	METAL CHIP 0 1/16W 1-216-864-11	←	←
C534	CERAMIC CHIP 0.01uF 50V 1-164-232-11	××	CERAMIC CHIP 3300pF 50V 1-164-182-11	××	←
C535	TANTAL. CHIP 33uF 6.3V 1-104-752-11	←	TANTAL. CHIP 10uF 6.3V 1-135-259-11	TANTAL. CHIP 22uF 6.3V 1-104-847-11	TANTAL. CHIP 10uF 6.3V 1-135-259-11
C536	××	××	××	××	××
C537	CERAMIC CHIP 0.22uF 16V 1-164-489-11	←	←	←	←
C538	TANTAL. CHIP 22uF 4V 1-104-847-11	××	××	××	××
C539	××	××	××	××	××
C540	TANTALUM CHIP 2.2uF 10V 1-135-149-11	××	TANTALUM CHIP 10uF 6.3V 1-135-259-11	××	TANTALUM CHIP 10uF 20V 1-135-259-11
C541	××	××	××	××	××
C542	CERAMIC CHIP 0.47uF 16V 1-107-823-11	←	××	××	××
C543	TANTAL. CHIP 47uF 4V 1-104-908-11	←	TANTAL. CHIP 4.7uF 16V 1-135-155-11	TANTAL. CHIP 10uF 20V 1-135-157-11	TANTAL. CHIP 4.7uF 16V 1-135-155-11
C544	CERAMIC CHIP 0.22uF 16V 1-164-489-11	××	××	××	××
C545	××	××	××	××	××
C546	ELECT CHIP 47uF 6.3V 1-126-205-11	ELECT CHIP 100uF 4V 1-126-209-11	ELECT CHIP 47uF 6.3V 1-126-205-11	ELECT CHIP 33uF 10V 1-126-393-11	←
C548	TANTALUM CHIP 4.7uF 6.3V 1-135-181-21	TANTALUM CHIP 22uF 4V 1-104-847-11	TANTALUM CHIP 15uF 6.3V 1-135-217-11	TANTALUM CHIP 10uF 6.3V 1-135-259-11	TANTALUM CHIP 15uF 6.3V 1-107-685-11
C549	××	××	××	CERAMIC CHIP 6800pF 25V 1-162-969-11	××
C550	TANTALUM CHIP 2.2uF 10V 1-135-149-21	←	TANTALUM CHIP 22uF 4V 1-104-847-11	××	←
C551	××	××	××	CERAMIC CHIP 0.01uF 25V 1-162-970-11	××

Destination	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
Ref. No.	Part No./Description	Part No./Description	Part No./Description	Part No./Description	Part No./Description
C552	××	××	××	××	××
C553	CERAMIC CHIP 4700PF 50V 1-162-968-11	××	××	××	××
C554	××	××	TANTALUM CHIP 1uF 16V 1-135-091-00	CERAMIC CHIP 4.7uF 25V 1-135-181-21	CERAMIC CHIP 4.7uF 25V 1-135-181-21
C555	××	××	TANTALUM CHIP 0.47uF 25V 1-135-259-11	CERAMIC CHIP 0.47uF 25V 1-135-083-11	←
C556	TANTALUM CHIP 2.2uF 10V 1-135-149-21	←	TANTALUM CHIP 4.7uF 25V 1-135-181-21	××	←
C557	CERAMIC CHIP 0.01uF 50V 1-164-232-11	←	CERAMIC CHIP 0.22uF 16V 1-164-489-11	CERAMIC CHIP 0.01uF 50V 1-164-232-11	←
C558	CERAMIC CHIP 0.47uF 16V 1-107-823-11	←	CERAMIC CHIP 1uF 10V 1-109-982-11	CERAMIC CHIP 6800pF 50V 1-163-019-11	←
C561	TANTAL. CHIP 10uF 6.3V 1-135-259-11	←	←	←	←
C563	TANTAL. CHIP 10uF 6.3V 1-135-259-11	××	××	××	××
C564	CERAMIC CHIP 0.1uF 16V 1-107-826-11	××	××	××	××
C565	CERAMIC CHIP 4700PF 50V 1-162-968-11	××	××	××	××
C567	××	××	××	××	××
C568	××	××	××	××	××
Q501	TRANSISTOR UN5115 8-729-420-53	←	←	←	←
Q503	TRANSISTOR 2SC4555-5.6.7 8-729-823-16	××	××	××	××
Q504	TRANSISTOR 2SC4555-5.6.7 8-729-823-16	××	××	××	××
Q506	TRANSISTOR UN5216QRS-TX 8-729-421-26	××	××	××	××
Q507	TRANSISTOR UN5216QRS-TX 8-729-421-26	←	←	←	←
Q510	TRANSISTOR UN5213-TX 8-729-402-42 **NOTE 2**	←	←	←	←
Q511	TRANSISTOR UN5213-TX 8-729-402-42	××	××	××	××
R501	METAL CHIP 4.7K 1/16W 1-216-829-11	METAL CHIP 5.6K 1/16W 1-216-830-11	METAL CHIP 470K 1/16W 1-216-853-11	METAL CHIP 3.3M 1/16W 1-216-863-11	←
R502	METAL CHIP 1.8K 1/16W 1-216-824-11	××	××	××	××
R503	METAL CHIP 120K 1/16W 1-218-897-11	METAL CHIP 100K 1/16W 1-218-895-11	METAL CHIP 0 1/16W 1-216-864-11	METAL CHIP 150K 1/16W 1-216-847-11	METAL CHIP 0 1/16W 1-216-864-11
R505	METAL CHIP 120 1/16W 1-216-810-11 **NOTE 1**	××	←	××	←
R506	METAL CHIP 120K 1/16W 1-218-897-11	METAL CHIP 220K 1/16W 1-218-903-11	METAL CHIP 82K 1/16W 1-218-893-11	METAL CHIP 180K 1/16W 1-218-901-11	←
R507	METAL CHIP 120 1/16W 1-216-810-11	←	←	←	←
R511	METAL CHIP 15K 1/16W 1-218-875-11	METAL CHIP 22K 1/16W 1-218-879-11	××	METAL CHIP 680K 1/16W 1-218-915-11	××
R512	METAL CHIP 0 1/16W 1-216-864-11	××	××	××	××
R513	METAL CHIP 4.7K 1/16W 1-216-829-11	××	××	××	××

Destination	TYPE 1	TYPE 2	TYPE 3	TYPE 4	TYPE 5
Ref. No.	Part No./Description	Part No./Description	Part No./Description	Part No./Description	Part No./Description
R514	METAL CHIP 10K 1/16W 1-216-833-11	METAL CHIP 22K 1/16W 1-216-837-11	METAL CHIP 6.8K 1/16W 1-216-831-11	METAL CHIP 10K 1/16W 1-216-833-11	METAL CHIP 6.8K 1/16W 1-216-831-11
R515	METAL CHIP 220 1/16W 1-216-813-11	METAL CHIP 4.7K 1/16W 1-216-829-11	METAL CHIP 0 1/16W 1-216-864-11	←	←
R516	METAL CHIP 120K 1/16W 1-218-897-11	xx	xx	xx	xx
R517	METAL CHIP 470K 1/16W 1-216-853-11	METAL CHIP 1M 1/16W 1-216-857-11	METAL CHIP 100K 1/16W 1-216-845-11	METAL CHIP 1M 1/16W 1-216-857-11	METAL CHIP 100K 1/16W 1-216-845-11
R519	xx	xx	xx	xx	xx
R520	xx	xx	METAL CHIP 0 1/16W 1-216-864-11	←	←
R522	METAL CHIP 470 1/16W 1-216-817-11	←	←	←	←
R523	METAL CHIP 2.2K 1/16W 1-216-825-11	MTTAL CHIP 10K 1/16W 1-216-833-11	METAL CHIP 2.2K 1/16W 1-216-825-11	xx	METAL CHIP 10K 1/16W 1-216-883-11
R525	xx	xx	METAL CHIP 47K 1/16W 1-216-841-11	xx	←
R526	METAL CHIP 470 1/16W 1-216-817-11	xx	xx	xx	xx
R527	METAL CHIP 470K 1/16W 1-216-853-11	xx	xx	xx	xx
R528	METAL CHIP 4.7K 1/16W 1-216-829-11	xx	xx	xx	xx
R529	METAL CHIP 4.7K 1/16W 1-216-829-11	xx	xx	xx	xx
R530	xx	xx	METAL CHIP 1M 1/16W 1-216-857-11	xx	METAL CHIP 1M 1/16W 1-216-857-11
R531	METAL CHIP 470 1/16W 1-216-817-11	←	←	←	←
R532	METAL CHIP 470 1/16W 1-216-817-11	xx	xx	xx	xx
R533	METAL CHIP 0 1/16W 1-216-864-11	xx	xx	xx	xx
R534	xx	xx	METAL CHIP 0 1/16W 1-216-864-11	xx	←
R535	xx	xx	xx	xx	xx
R536	xx	xx	xx	xx	xx
R537	METAL CHIP 4.7K 1/16W 1-216-829-11	METAL CHIP 0 1/16W 1-216-864-11	←	←	←
R538	METAL CHIP 0 1/16W 1-216-864-11 **NOTE 3**	xx	←	←	←
R556	METAL CHIP 470K 1/16W 1-216-853-11	←	←	←	←
R557	METAL CHIP 47K 1/16W 1-216-841-11	xx	xx	xx	xx
R558	METAL CHIP 47K 1/16W 1-216-841-11	xx	xx	xx	xx
R560	xx	xx	xx	xx	xx
CN501	CONNECTOR,FFC/FPC(LIF) 8P 1-764-707-21	←	←	←	←

Correct your service manual as shown below.
☞: Points added parts. ☛: Points deleted parts. ▨☞ : Points changed parts.

⟨Page 5-5⟩

205 4-7092-821-A DD-80 BOARD, COMPLETE (TRV11/TRV21)
205 4-7092-822-A DD-80P BOARD, COMPLETE (TRV11E/TRV21E)

★ **The Zoom SW (S003) which is mounted on the DD-80 board is moved outside the board.**

EXPLODED VIEWS

⟨Page 5-5⟩ 5-1-5. MAIN SECTION

The Zoom SW in the illustration 205 (A-7092-821-A DD-80 BOARD, COMPLETE / A-7092-822-A DD-80P BOARD, COMPLETE) is not included.

⟨Page 5-5⟩ S003 1-762-441-11 SWITCH ROTARY (ZOOM SW) ☞

ELECTRICAL PARTS LIST

⟨Page 5-14⟩ From the DD-80 BOARD, COMPLETE ☛
S003 1-762-441-11 SWITCH ROTARY (ZOOM SW)

⟨Page 5-30⟩ Into MISCELLANEOUS, ☞
S003 1-762-441-11 SWITCH ROTARY (ZOOM SW)

⟨Page 5-13⟩

Ref. No.	Part No.	Description	Remarks
	4-7092-821-A	DD-80 BOARD, COMPLETE *********************	(TRV11/TRV21)
	4-7092-822-A	DD-80P BOARD, COMPLETE **********************	(TRV11E/TRV21E)

⟨Page 6-16⟩

10. Flange back adjustment

Adjustment procedure:

Order	Page	Address	Data	Procedure
1				Check that the center of the flange back adjustment chart coincides with that of the display on the monitor at both ends: TELE end and the WIDE end of the zoom lens.
2	6	00	01	After setting the data, press the PAUSE button. (Preparation)
3				Confirm that the data at page F, address 3C to 41 is the initial value, referring to the "Page F address list". ▨☞
4	6	11		Confirm that the data is 00.
5	6	42	02	After setting the data, press the PAUSE button.
6	6	43	01	After setting the data, press the PAUSE button.
7	6	01	13	After setting the data, press the PAUSE button.
8	6	01	15	After setting the data, press the PAUSE button. The adjustment data is automatically input to page: F, addresses: 3C to 41.
9	6	11		Confirm that the data is 01.

〈Page 6-28〉

INCORRECT	CORRECT
[Video input signal for adjustment] If the signal column specifies the "Color bar signal with the chroma and burst signals turned OFF", input the color bar signal whose chroma and burst signals are turned OFF. Confirm that the signal level at SD-21 board CN102 pin ⑦ has 1.00Vp-p before starting adjustment.	**[Video input signal for adjustment]** Playback an alignment tape. Use the color bar signal of the alignment tape playback as the input signal to this machine. Then check that the while (100 %) signal amplitude at CN102 pin ⑦ on the SD-21 board is 1.00 V p-p. If the signal column specifies the "Color bar signal with the chroma and burst signals turned OFF", remove the capacitor C114 on the SD-21 board, and connect the IC102 pin ⑤ to GND. (See page 6-38.) Return C114 and IC102 pin ⑤ to the original connections upon completion of adjustment.

〈Page 6-29〉

21-2. –7.5V adjustment

Mode	Stop

★ **All adjustment items below must be performed in Playback mode.**

Mode	Playback
Signal	....

〈Page 6-29〉
21-3. BRIGHT adjustment

〈Page 6-30〉
21-4. CONTRAST adjustment

〈Page 6-31〉
21-5. COLOR adjustment

〈Page 6-32〉
21-6. HUE adjustment

〈Page 6-32〉
21-7. BURST CLEANING adjustment

〈Page 6-34〉
21-9. White balance preset adjustment (1)

〈Page 6-35〉
21-10. White balance preset adjustment (2)

〈Page 6-36〉
21-11. White balance adjustment

〈Page 6-37〉
21-13. Horizontal display position adjustment

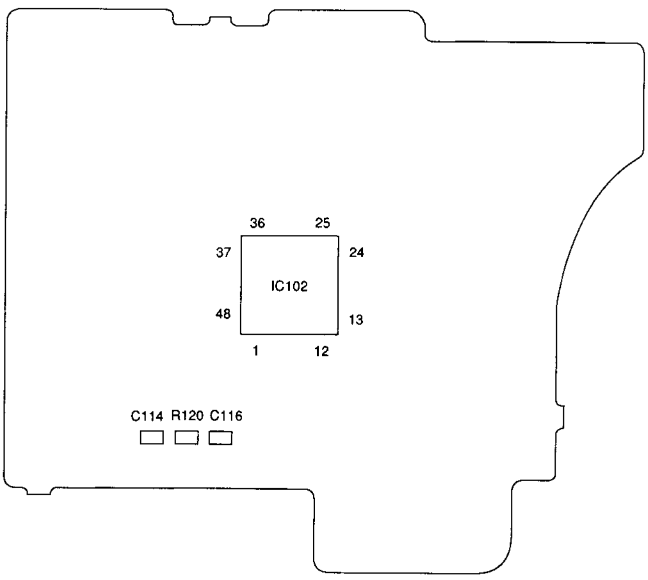
SUPPLIMENT-1

〈Page 23〉
21-3. Horizontal display position adjustment

〈Page 31〉
21-12. White balance adjustment

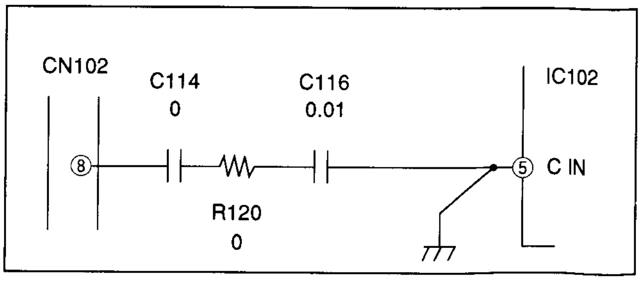
〈Page 6-38〉

SD-21 BOARD (SIDE A)



- Remove the capacitor C114 on the SD-21 board and connect the IC102 pin ⑤ to GND in order to turn OFF the chroma and burst signals of the color bar signal.

SD-21 BOARD



Sony Corporation
Personal A&V Products Company

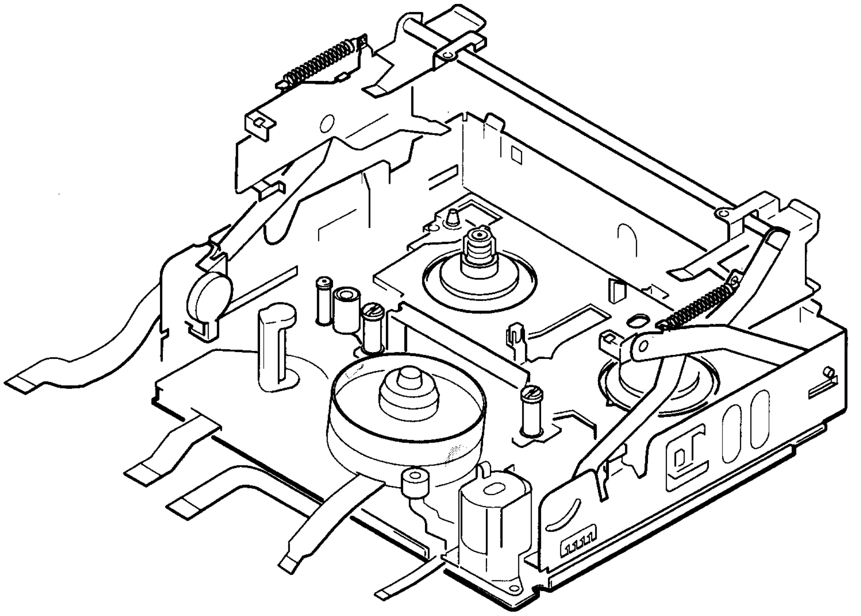
97A1693-1
Printed in Japan © 1997.1
Published by Quality Engineering Dept.
(Osaki East)

8mm Video MECHANICAL ADJUSTMENT MANUAL Ⅶ

B MECHANISM

Video8

Use this mechanical adjustment manual Ⅶ together with the service manual of the respective models.



8 MECHANISM DECK

SONY®

MICROFILM

TABLE OF CONTENTS

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

1-1. Cassette Compartment Block Assy ···3
1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed ···4

2. PERIODIC CHECK AND MAINTENANCE ITEMS

2-1. Rotary Drum Assy Cleaning ···5
2-2. Tape Path Cleaning ···5
2-3. Periodic Check Items ···6
2-4. Service Tool List ···7

3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy ···8
3-2. Drum Assy ···9
3-3. Drum Base Block Assy, Shaft Ground ···10
3-4. Gooseneck Retainer, Gooseneck Gear Assy ···11
3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy ···12
3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy ···15
3-7. Tension Regulator Band Assy, TG1 Arm Assy, S Reel Table Assy, S Ratchet, S Ratchet Release Plate, RVS Arm ···16
3-8. Pinch Arm Assy, TG4 Arm Block Assy ···17
3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide ···18
3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail ···19
3-11. DC Motor Assy (Loading) ···21
3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy ···22
3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate ···23
3-14. Cam Gear ···24
3-15. GL Slider Assy, GL Arm ···25
3-16. Rotary Switch ···26
3-17. Capstan Motor ···27
3-18. Tension Regulator Position Adjustment ···28
3-19. FWD Tape Hold -Back Tension Adjustment ···29

4. TAPE PATH ADJUSTMENT

4-1. Preparations for Adjustment ···30
4-2. Tracking Adjustment ···31
4-3. No. 4 Guide (TG-4) Adjustment ···31
4-4. CUE, REV Waveforms Check ···32
4-5. Checks After Adjustments ···32

5. EXPLODED VIEWS

5-1. Cassette Compartment Block Section ···34
5-2. LS Chassis Block Section ···35
5-3. Mechanism Chassis Block Section ···36

6. PRINTED WIRING BOARD AND SCHEMATIC DIAGRAM ···37

7. ELECTRICAL PARTS LIST ···38

For the mode selector operation, schematic diagram and parts list, refer to the Supplement-1 Manual.

1. PREPARATION FOR CHECKING, ADJUSTING AND REPLACING THE MECHANISM

For the disassembly procedures of the cabinet and printed wiring boards, please refer to the "DISASSEMBLY" section of the service manual of the respective models.
To re-assemble the mechanical parts which are disassembled in the following sections, perform the disassembly steps in reverse, unless otherwise specified.
The mechanisms are adjusted while set in the USE mode of operation. (Refer to the "Mode Selector Operation Procedure of the Supplement-1 Manual for how to enter the USE mode.)

1-1. Cassette Compartment Block Assy

1. Disassembly Procedure (Refer to Fig. 1.)

1) Set the mechanism to USE mode.
2) Confirm that the Cassette Compartment Block Assy is opened. If it is not opened, open it referring to Fig. a.
3) Remove the claws Ⓐ and Ⓑ of the Damper Assy ① from the chassis.
4) Remove the washer ② from the shaft of the Cassette Compartment near the Drum, next to the loading motor. Remove the shaft of the arm from the slot.
5) Remove the shaft of the arm from the slot Ⓒ of the Cassette Compartment near the Drum, next to the capstan motor. (Refer to Fig. b)
6) Lift up the Cassette Compartment at the Drum side in the direction of the arrow Ⓓ, and remove the arm shaft of the Cassette Compartment from the LS Chassis ④ near the Reel Tables. Remove the Cassette Compartment Assy ③ in the direction of the arrow Ⓔ.

2. Precautions During Re-Assembling

1) After attaching the Tension Spring, confirm that the straight portion at the end of the curved hook of the spring is positioned inside the mechanism. (Refer to Fig. c)
2) Confirm that the claw in the bottom of the shaft near the Reel Table of the Cassette Compartment is hooked to the LS Chassis.
3) Confirm that the claw of the Damper Assy is hooked to the LS Chassis. (Refer to Fig. b)

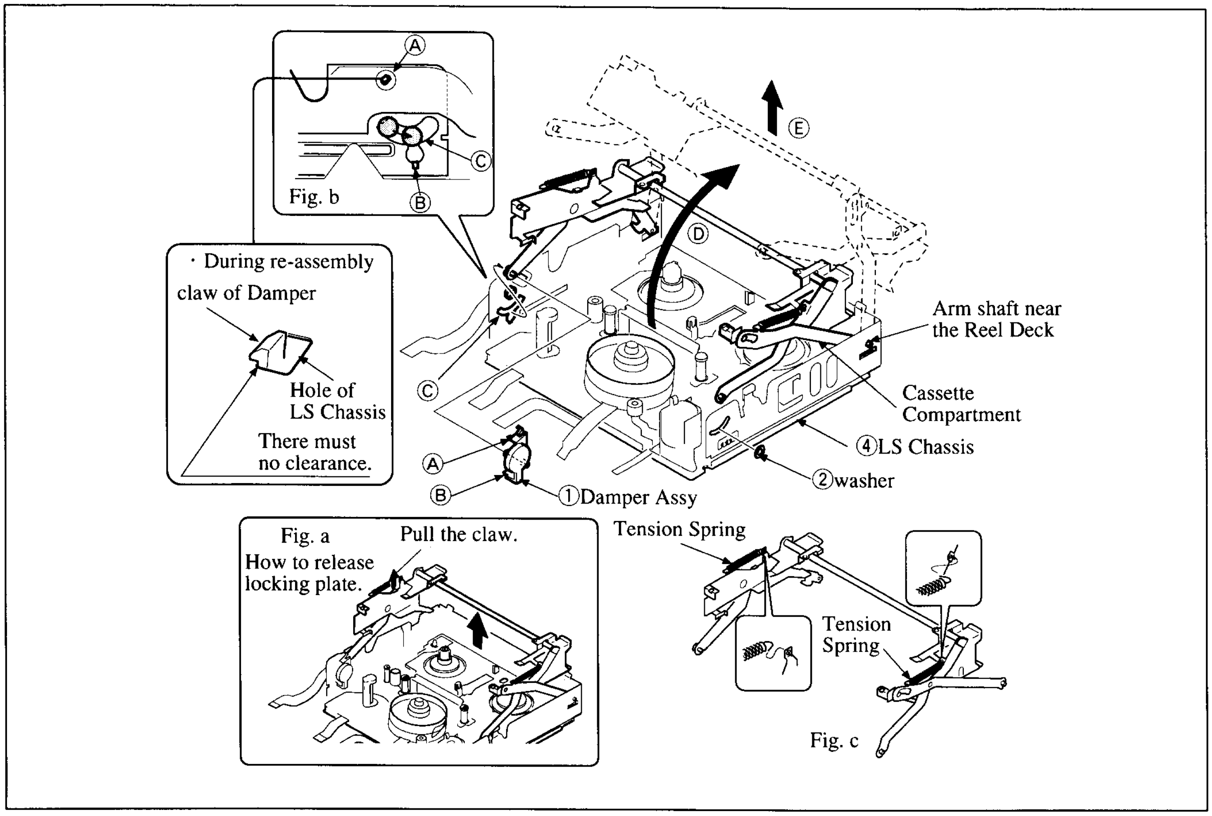

Ⓐ
Ⓒ
Fig. b
Ⓑ
Ⓔ
Ⓓ
· During re-assembly
claw of Damper
Hole of
LS Chassis
There must
no clearance.
Ⓒ
Ⓐ
Ⓑ
①Damper Assy
Arm shaft near
the Reel Deck
Cassette
Compartment
④LS Chassis
②washer
Fig. a
Pull the claw.
How to release
locking plate.
Tension Spring
Tension
Spring
Fig. c

Fig. 1

1-2. How to Operate the Mechanism with the Cassette Compartment Block Assy Removed

1. How to load a cassette tape (Refer to Fig. 2):

1) While referring to section "DISASSEMBLY" of the respective service manual, turn the main power on with the cabinet and camera section removed. (It enables to operate the mechanical deck.)
2) Connect the adjustment remote commander (Ref. No. J-10) and establish the TEST mode.

> Example of establishing the TEST mode: model CCD-TR420E/TR440E.
> Select page: 6, address: 00, set data :01 and press the PAUSE button to release protection.
> Select page: 7, address: 01, set data: 01 and press the PAUSE button.
> After tape loading or other desired operations of mechanism are completed, be sure to perform the following:
> Select page: F, address: 01, set data :00 and press the PAUSE button.
> Select page: 6, address: 00, set data: 00 and press the PAUSE button.

3) Press the push-switch ① knob in the direction of the arrow which sets the machine into loading mode.

☆ PB, FF/REW and CUE/REV operations are possible.

2. How to establish RECORD mode:

1) Press pin of the push-switch ② (ON state) and keep the ON state by fixing with adhesive tape ③.
2) Turn the main power switch ON (select VTR or CAMERA position of in case of camera).
3) Set the RECORD switch to ON.
(When the TEST mode is selected, the rotation detection of the S and T reel tables is muted, and the top end sensor is disable which allow to run the tape.)

3. How to eject a cassette tape:

1) Press the EJECT switch to ON.

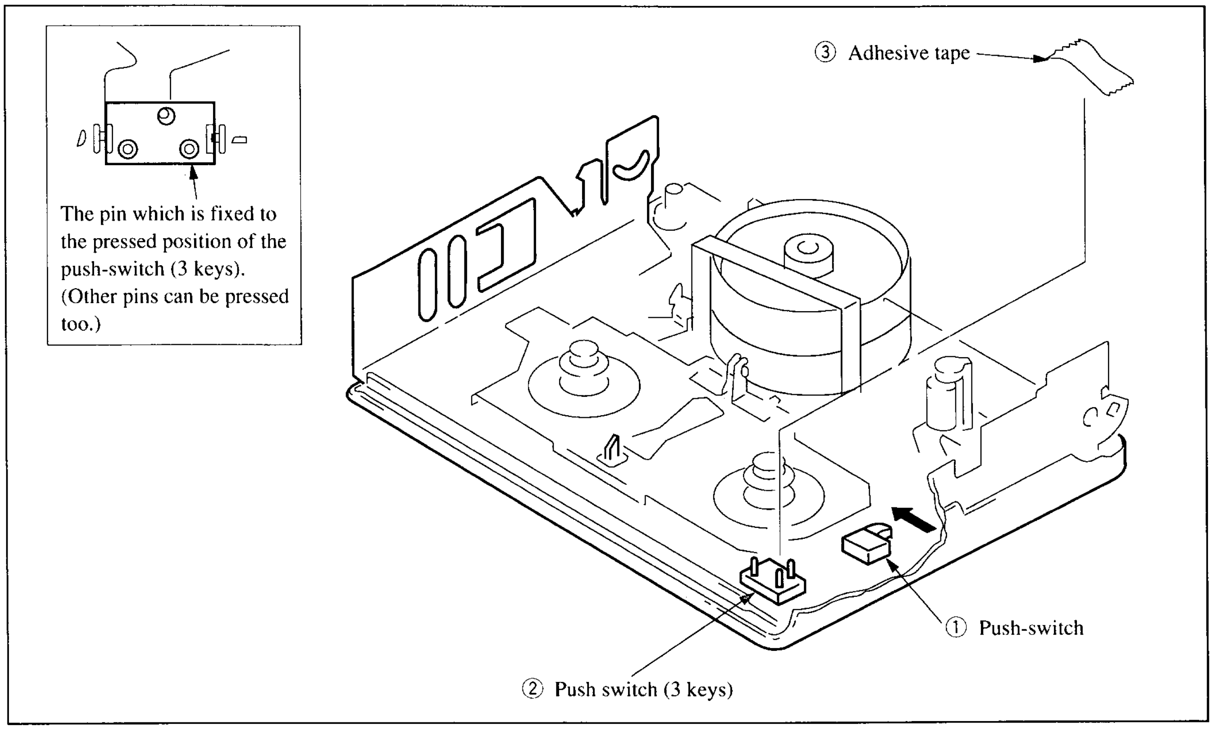

The pin which is fixed to the pressed position of the push-switch (3 keys). (Other pins can be pressed too.)
③ Adhesive tape
① Push-switch
② Push switch (3 keys)

Fig. 2

2. PERIODIC CHECK AND MAINTENANCE ITEMS

- Perform the following periodic check and maintenance to ensure that the machine functions continue to operate in peak condition, and to protect the tape and mechanism deck. After completing repair work, perform the following maintenance items regardless of how long the user's machine has been used.

2-1. Rotary Drum Assy Cleaning

Press the cleaning piece (Ref. No. J-2) moistened with cleaning fluid (Ref. No. J-1) lightly on the Rotary Drum Assy. Gently turn the Rotary Drum Assy slowly by hand counter-clockwise to clean the rotary drum.

Caution: Never attempt to turn the head drum motor by turning the main power ON. Also, never turn the drum clockwise by hand. In addition, never move the cleaning piece vertically with respect to the head tips, since this will damage them. Never clean the head drum in any way other than as described above.

2-2. Tape Path Cleaning (Refer to Fig. 3.)

1) Set the mechanism to USE mode. Clean the tape path system (TG-1, TG-2, TG-3, TG-4, pinch roller, capstan shaft) and lower drum using a very thin cotton swab (Ref. No. J-3) moistened with cleaning fluid.

Caution: Take care that the very thin cotton swab (Ref. No. J-3) does not touch the oil or grease of the various link mechanisms.

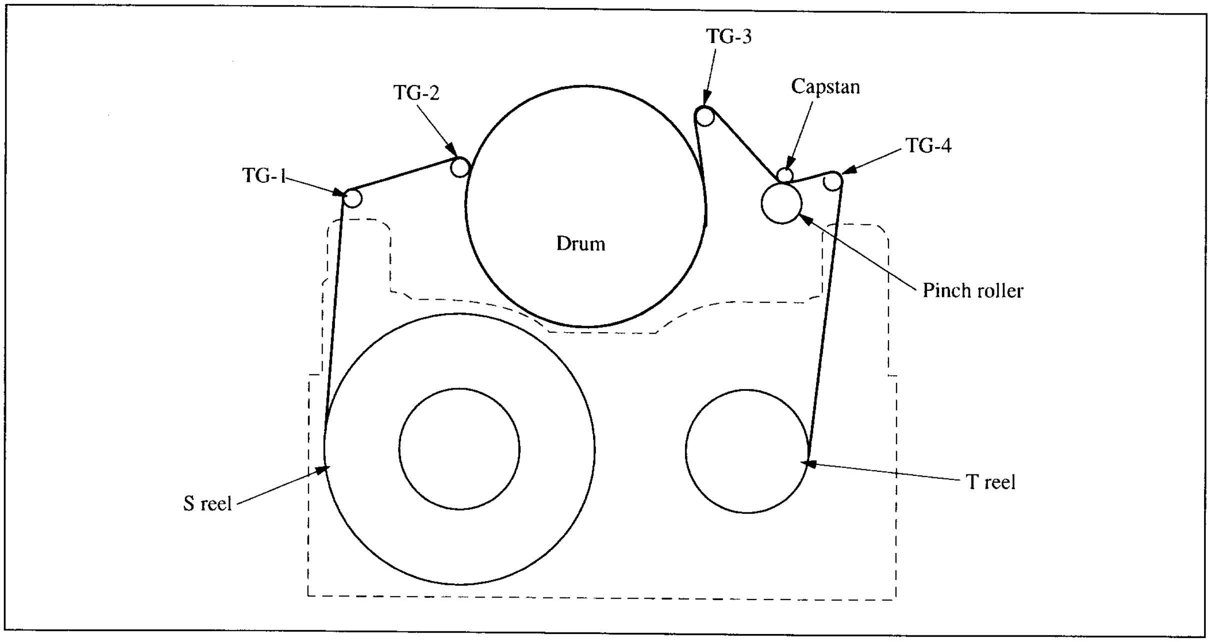


Fig. 3

2-3. Periodic Check Items

	Maintenance and Inspection Points	Operating Hours										Remarks
		500	1000	1500	2000	2500	3000	3500	4000	4500	5000	
	Cleaning of tape running surface	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
	Cleaning and degaussing of Rotary Drum Assy	○	○	○	○	○	○	○	○	○	○	Take care not to get oily.
Drive System	Timing Belt	—	☆	—	☆	—	☆	—	☆	—	☆	3-965-546-01
	Capstan Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	Take great care not to let any oil contact the tape running surface.
	Change Gear Shaft Relay Pulley Shaft	—	◎	—	◎	—	◎	—	◎	—	◎	
	Loading Motor	—	☆	—	☆	—	☆	—	☆	—	☆	X-3945-401-1
Performance Check	Abnormal Sound	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Tape Hold-back Tension Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	
	Brake System	—	☆	—	☆	—	☆	—	☆	—	☆	
	FWD } Torque RVS } Measurement	—	☆	—	☆	—	☆	—	☆	—	☆	

○Cleaning ◎Lubrication ☆Check

Note: When overhauling the machine, replace the parts while referring to the above table.

Note: Regarding oil

- Be sure to use the specified oil. (If the viscosity and other characteristics are different, various troubles may arise.)
  Oil: Sony part No. 7-661-018-18
  (Mitsubishi diamond oil hydro fluid NT-68)
- For the oil lubricated bearings, use oil free from dust or foreign materials. If the oil contains any dust or foreign material, the bearings will wear out quickly or burn out.
- One drop of oil is the amount of oil which forms at the tip of a stick of 2 mm diameter.

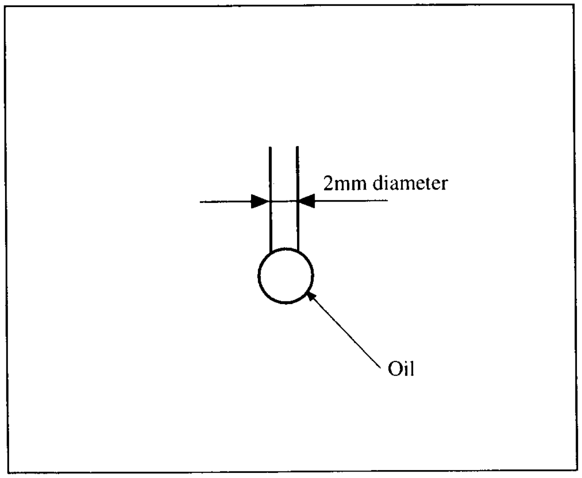


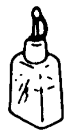
Fig. 4

2-4. Service Tool List

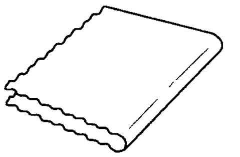
Ref. No.	Name	Parts Code	Tool Stamp	Applications
J-1	Cleaning fluid	Y-2031-001-0	——	
J-2	Cleaning piece	2-034-697-00	——	
J-3	Very thin cotton swab (made by Nippon Cotton Swab Inc. (P752D))		——	
J-4	Head demagnetizer	Commercially available	——	
J-5	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-6	Alignment tape (NTSC : WR5-1NP) (PAL : WR5-1CP)	8-967-995-02 8-967-995-07	——	Tape path
J-7	FWD/RVS take-up torque cassette	J-6080-824A	GD-2086	
J-8	Screwdriver for tape path adjustment	J-6082-026-A	——	For tape guide adjustment
J-9	FWD/BACK tension adjustment screwdriver	J-6082-187-A	——	
J-10	Remote commander for adjustment	J-6082-053-B	——	Tape path (Setting PATH mode)
J-11	MD process table	J-6082-166-A	——	
J-12	FLOIL Grease SG-941	7-662-001-39	——	
J-13	FLOIL Grease SG-055G	7-651-000-09	——	

Other equipment
- Oscilloscope
- Analog circuit tester (input impedance 20 kΩ)

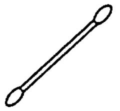
J-1



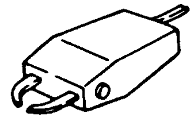
J-2



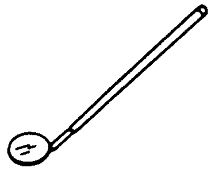
J-3



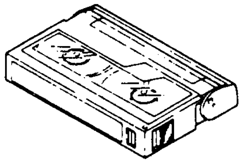
J-4



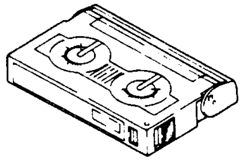
J-5



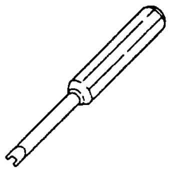
J-6



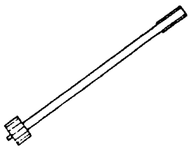
J-7



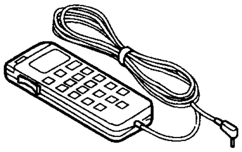
J-8



J-9



J-10



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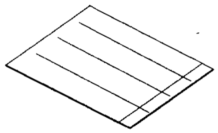


J-12

J-13

7-651-000-09
SG-055G

3. CHECKING, ADJUSTING AND REPLACING THE MECHANISM

3-1. HC Roller Block Assy (Refer to Fig. 5)

1. Disassembly Procedure

1) Remove the Torsion Spring ① from the cut-out Ⓐ of the motor holder. Hook it to the claw Ⓑ of the HC Arm.
2) Remove the HC Roller Block Assy in the direction shown by Ⓒ.
3) Remove the stop washer ② and remove the HC Roller Block Assy ③.

2. Precautions During Re-Assembly

1) After attaching the HC Roller Block Assy, confirm that both ends of the torsion spring are hooked to Ⓐ and Ⓓ.
2) Align the block so that the cut-out Ⓔ agrees with the rib Ⓕ.

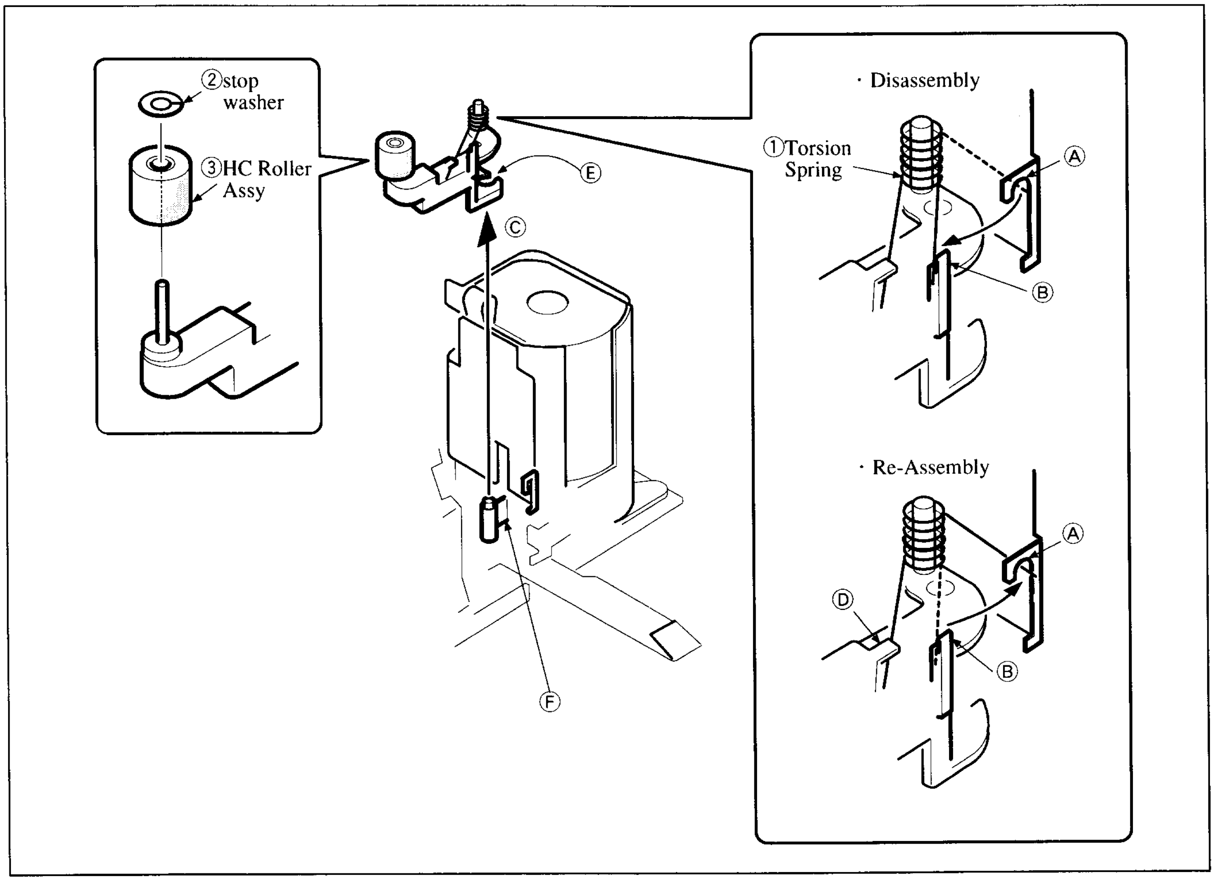

②stop washer
③HC Roller Assy
Ⓔ
Ⓒ
Ⓕ
· Disassembly
①Torsion Spring
Ⓐ
Ⓑ
· Re-Assembly
Ⓓ
Ⓐ
Ⓑ

Fig. 5

3-2. Drum Assy (Refer to Fig. 6)

1. Disassembly Procedure

1) Set the mechanism to USE mode.
2) Remove the three screws (M 1.4) ① and remove the Drum Assy ②.

Caution: Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)

2. Precautions During Re-Assembly

1) Be careful not to touch the outer circumference of the drum. (Hold the portions Ⓐ and Ⓑ of the drum assy.)
2) When tightening the three screws (M 1.4), tighten them in the order Ⓒ, then Ⓓ, then Ⓔ.
3) After attaching the Drum Assy, perform the steps in section "4. TAPE PATH ADJUSTMENT".

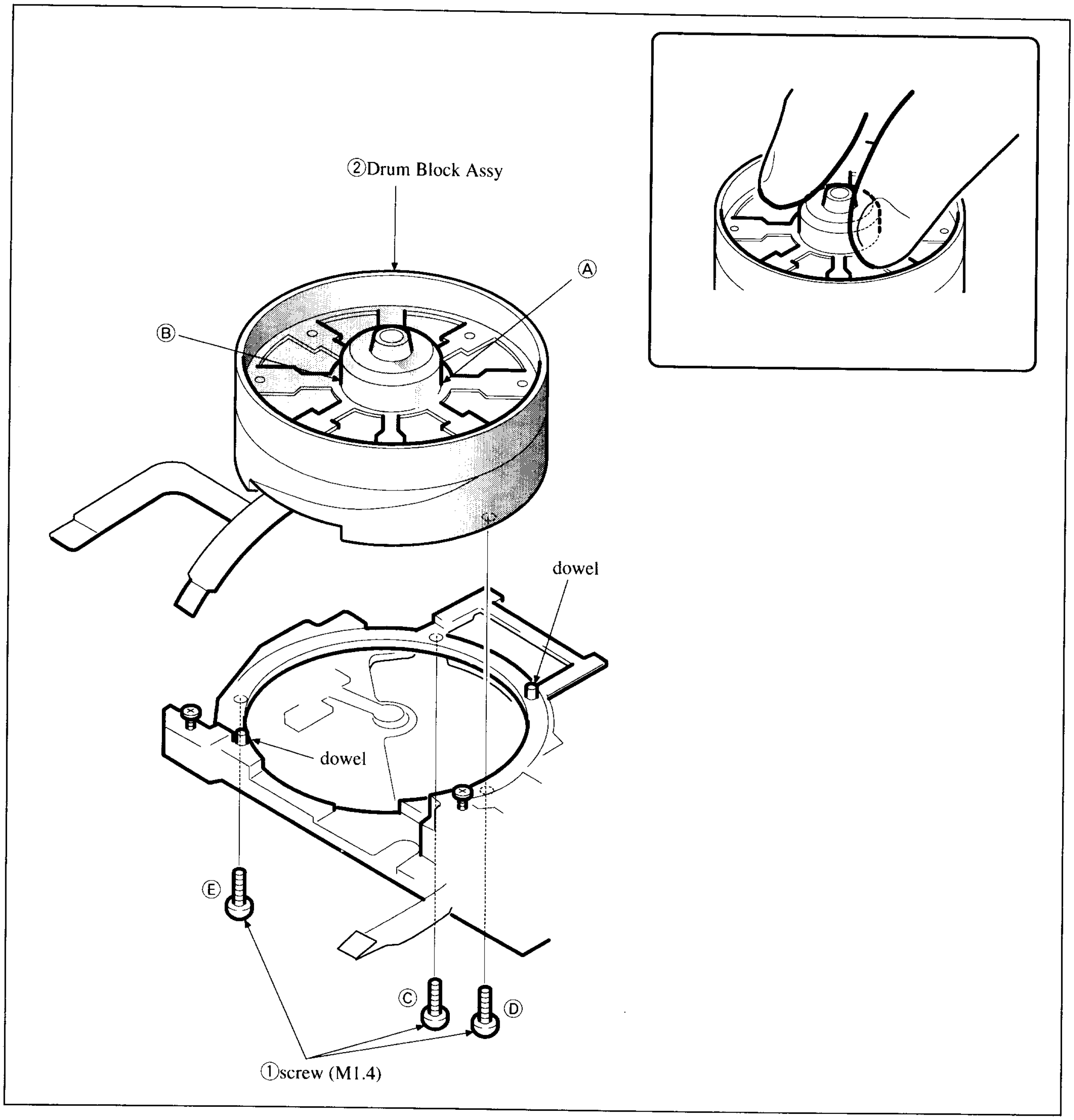


Fig. 6

3-3. Drum Base Block Assy, Shaft Ground (Refer to Fig. 7)

1. Disassembly Procedure

1) Remove the Drum Assy referring to section 3-2.
2) Remove the three screws (M 1.4×2.5) ① and remove the Drum Base Block Assy ②.
3) Remove the screw (M 1.7×1.4) ③ and remove the Shaft Ground ④.

Caution 1: Do not hold the spring portion of the Shaft Ground ④.

Caution 2: The loading motor can be removed while the mechanism is in this state. However, do not move any other mechanical parts (especially gears and cams around the rotary switch) when removing the loading motor. (Refer to 3-11.)

2. Precautions During Re-Assembly

1) Do not touch the spring portion of the Shaft Ground ④.
2) When tightening the three screws (M 1.4×2.5), tighten them in the order of Ⓐ, then Ⓑ, then Ⓒ.
3) After re-assembly is completed, perform the steps in section "4. TAPE PATH ADJUSTMENT".

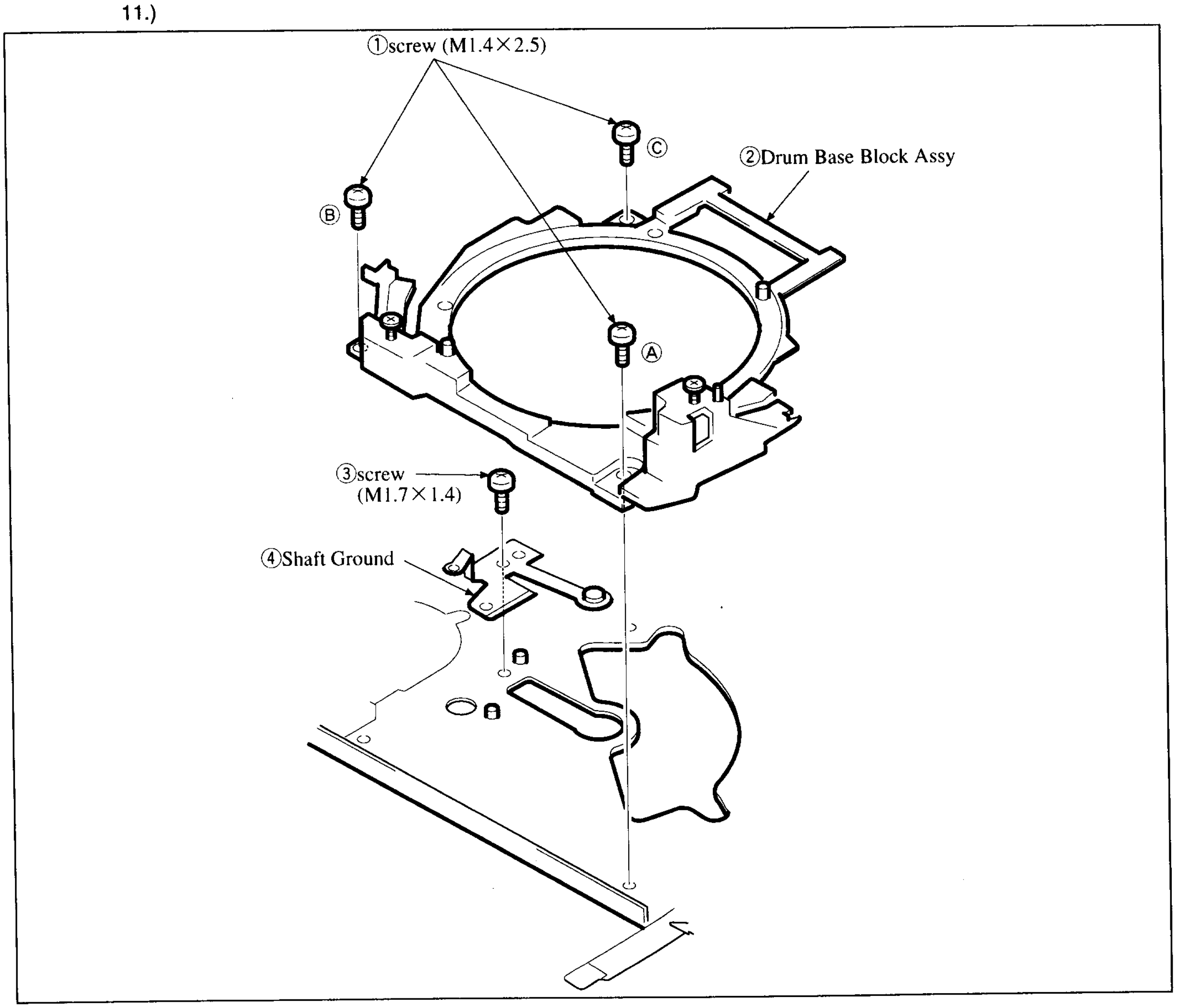


Fig. 7

3-4. Gooseneck Retainer, Gooseneck Gear Assy (Refer to Fig. 8)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the LED ① from the LED holder of the Gooseneck Retainer ③.
   (Turn the flexible board 90° outside and remove it upward.)
3) Remove the three screws (M 1.4×2.5) ② and remove the Gooseneck Retainer ③.
4) Remove the stop washer ④ and remove the Gooseneck Gear Assy ⑤.

2. Precautions During Re-Assembly

1) When attaching the Gooseneck Retainer ③, take care that the Gooseneck Retainer ③ does not collide with the tension regulator band. (The tension regulator band must be located inside.)
2) Hook the T-side claw on the guide.

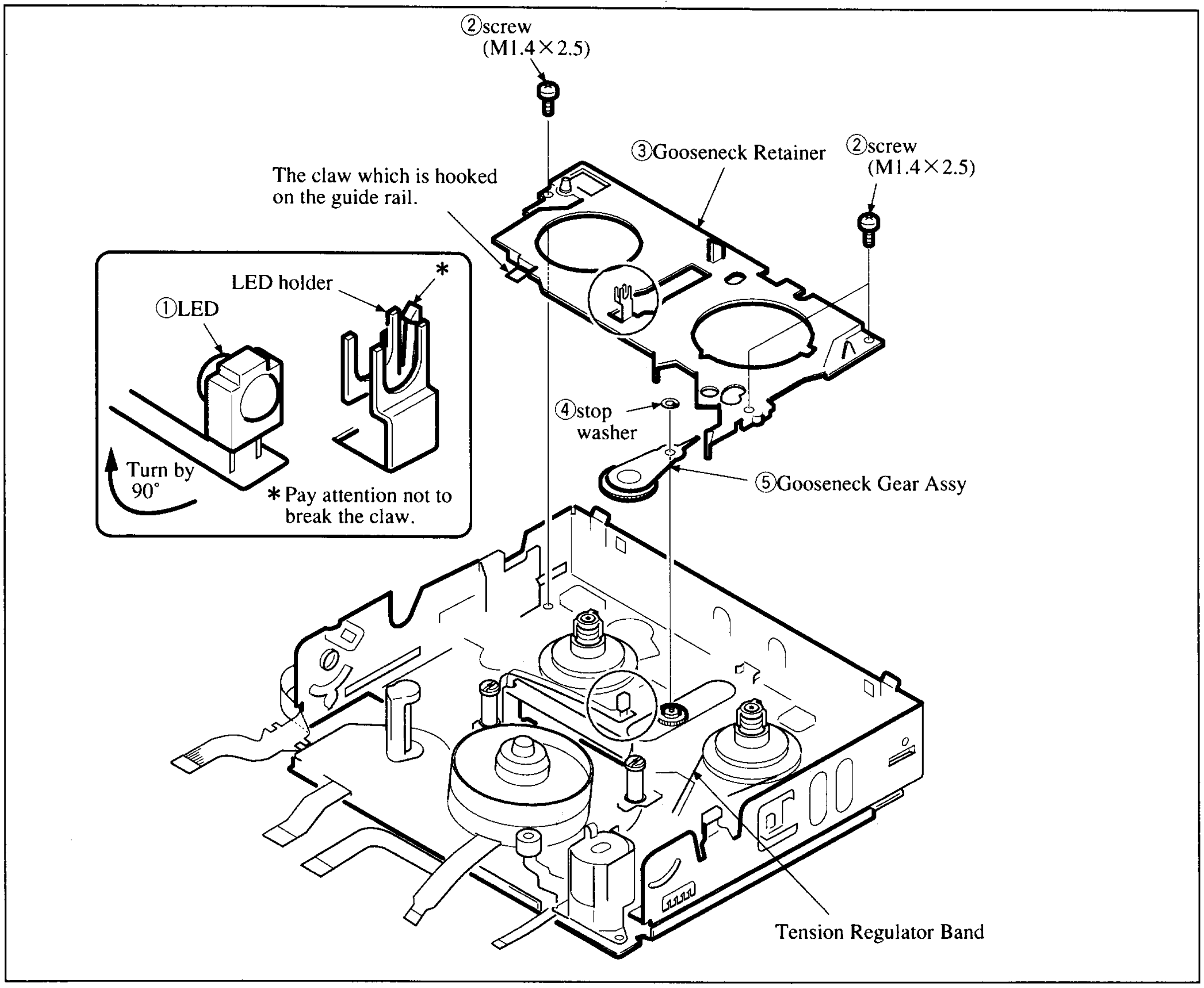

②screw
(M1.4×2.5)
③Gooseneck Retainer
②screw
(M1.4×2.5)
The claw which is hooked on the guide rail.
LED holder
*
①LED
Turn by 90°
* Pay attention not to break the claw.
④stop washer
⑤Gooseneck Gear Assy
Tension Regulator Band

Fig. 8

3-5. LS Chassis Block Assy, Mechanical Chassis Block Assy (Refer to Fig. 9)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the FP-221 flexible board ① from the flexible board holder.
4) Remove the stop ring E1.5 ②.
5) Remove the two screws (M 1.4×2.5) ③ and remove the LS Chassis Block Assy ④ from the Mechanical Chassis Block ⑤ in the direction of the arrow Ⓐ.

Note: The Tension Regulator Plate (2) can easily fall into the Mechanical Chassis Block Assy. Take care not to drop it.

2. Precautions During Re-Assembly

1) Before attaching the LS Chassis Block Assy, confirm that the respective phase-determining holes have been adjusted for correct phase. Also confirm that the specified locations of the Mechanical Chassis Block Assy and the LS Chassis Block Assy are coated with grease SG-055G (Ref. No. J-13). (Refer to Fig. a)
2) When attaching the LS Chassis Block Assy, insert the LS Cam Plate (on the LS chassis side) into the dowel (on the mechanical chassis side). Also insert the TG1 Cam Axis (on the LS chassis side) into the Tension Regulator Plate (2) (on the mechanical chassis side).
3) When attaching these block assemblies, attach them while pressing the TG-1 Arm Assy in the direction toward the TG-2 Guide. (Refer to Fig. b)
4) Pay attention that the TG-1 Arm is not floated.

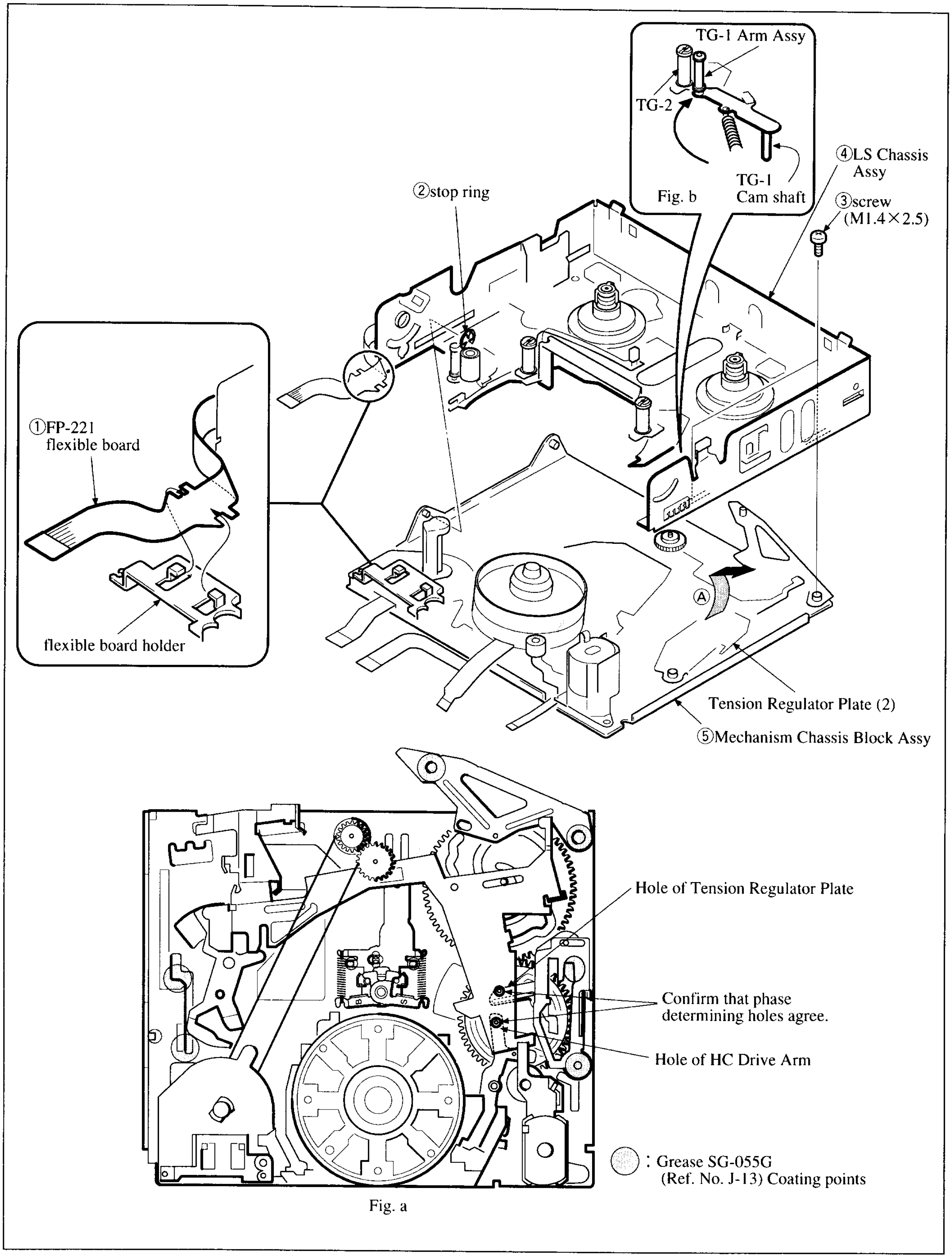

TG-1 Arm Assy
TG-2
TG-1
Cam shaft
Fig. b
④LS Chassis Assy
③screw (M1.4×2.5)
②stop ring
①FP-221 flexible board
flexible board holder
Ⓐ
Tension Regulator Plate (2)
⑤Mechanism Chassis Block Assy
Hole of Tension Regulator Plate
Confirm that phase determining holes agree.
Hole of HC Drive Arm
: Grease SG-055G (Ref. No. J-13) Coating points
Fig. a

Fig. 9

- **PARTS CONSTITUTING THE LS CHASSIS.**

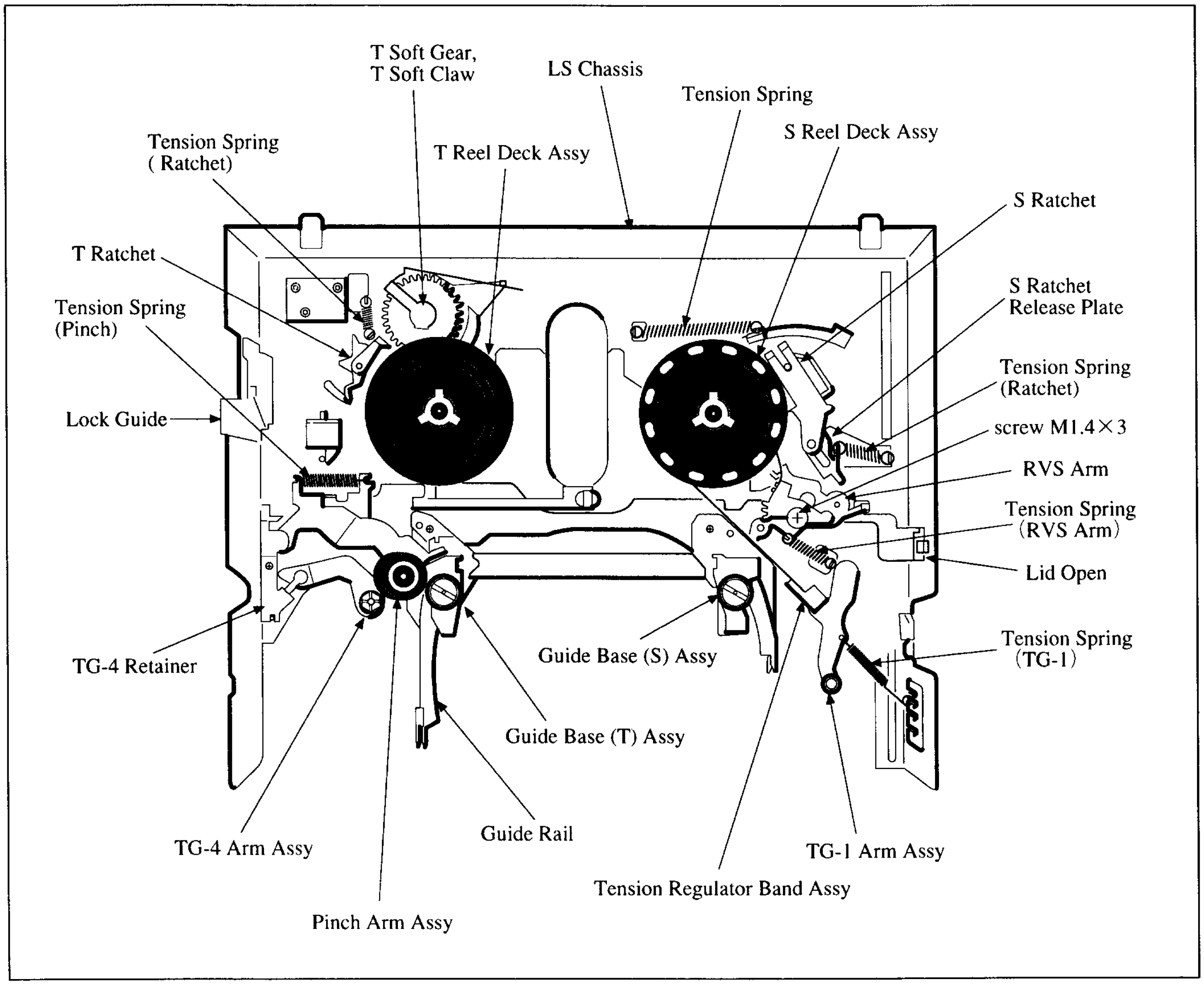

T Soft Gear,
T Soft Claw
LS Chassis
Tension Spring
S Reel Deck Assy
Tension Spring
(Ratchet)
T Reel Deck Assy
S Ratchet
T Ratchet
S Ratchet
Release Plate
Tension Spring
(Pinch)
Tension Spring
(Ratchet)
Lock Guide
screw M1.4×3
RVS Arm
Tension Spring
(RVS Arm)
Lid Open
Tension Spring
(TG-1)
TG-4 Retainer
Guide Base (S) Assy
Guide Base (T) Assy
Guide Rail
TG-4 Arm Assy
TG-1 Arm Assy
Tension Regulator Band Assy
Pinch Arm Assy

Fig. 10

3-6. T Reel Table Assy, T Ratchet, T Soft Gear Block Assy (Refer to Fig. 11)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the claw of the T Reel Deck Assy ① from the chassis and remove the T Reel Deck Assy from its shaft.
4) Remove the Tension Spring (Ratchet) ② from the LS Chassis and turn the T Ratchet ③ in the direction of the arrow Ⓐ and remove it .
5) Turn the T Soft Gear Block Assy ④ in the direction of the arrow Ⓑ and remove it .

2. Precautions During Re-Assembly

1) Confirm that the protrusions of both the T Soft Gear Block Assy and T Ratchet are securely locked to the LS Chassis.
2) Be careful not to deform the claw.

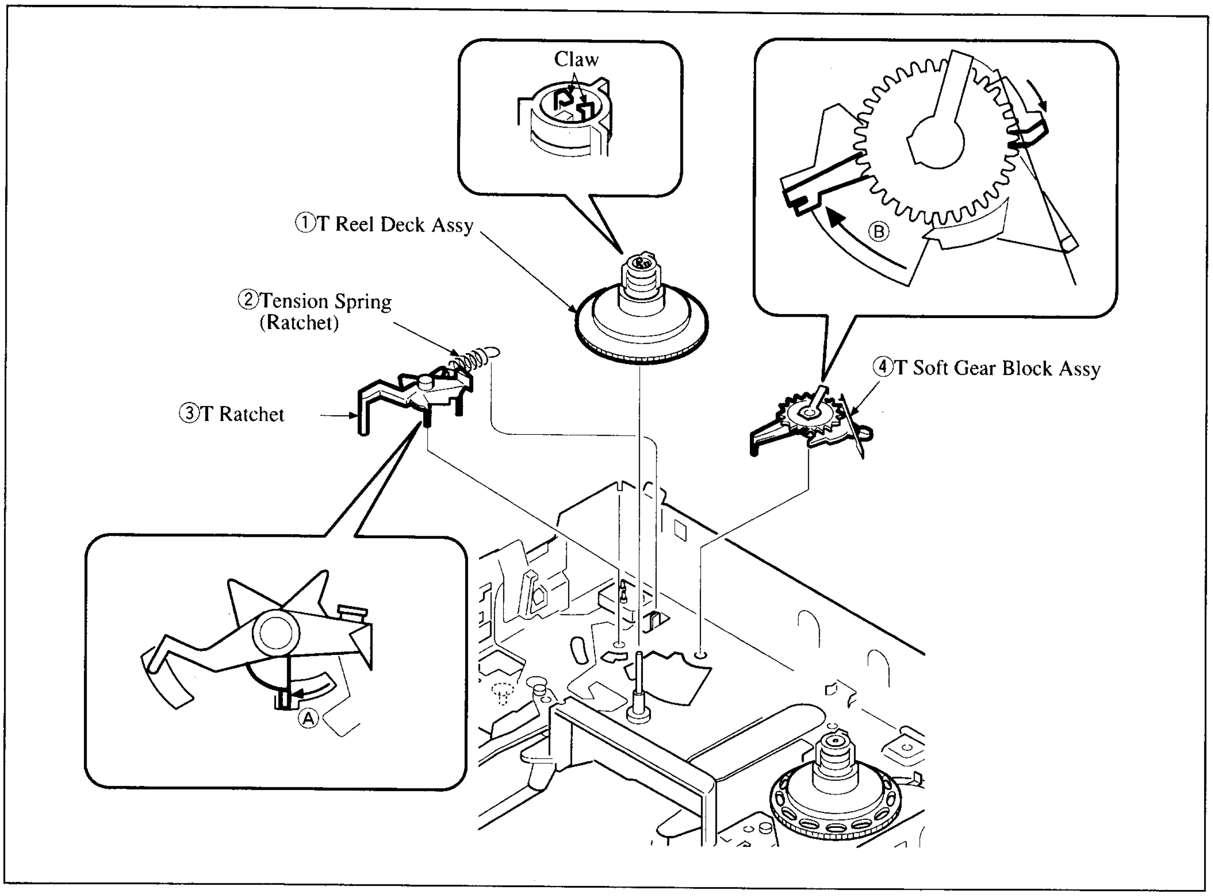


Fig. 11

3-7. Tension Regulator Band Assy, TG1 Arm Assy, S Reel Table Assy, S Ratchet, S Ratchet Release Plate, RVS Arm (Refer to Fig. 12)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the Tension Spring (TG1) ① from the LS Chassis.
4) Remove the screw (M 1.4×3) ② and remove the Tension Adjustment Block of the Tension Regulator Band Assy ④ form RVS Arm.
5) Release the S Ratchet ⑥ in the direction of the arrow Ⓐ and remove the Tension Regulator Band (while taking care not to bend the band) from the S Reel.
6) Remove the TG1 Arm Assy ③ from the LS Chassis, then remove the claw of the Tension Regulator Band Assy ④. (Refer to Fig. a)
7) Remove the claw of the S Reel Deck Assy ⑤ from the chassis and remove the S Reel Deck Assy from its shaft.
8) Remove the S Ratchet ⑥. (Because it is press-fitted, insert tip of screwdriver into the center of rotation and remove it.
9) Remove the Tension Spring (ratchet) ⑦ from the LS Chassis and remove the S Ratchet Release Plate ⑧.
10) Remove the Tension Spring ⑨ from the LS Chassis and remove the RVS Arm ⑩ by turning it..

2. Precautions During Re-Assembly

1) Confirm that the dowel of the S Ratchet Release Plate is inserted into the groove of the S ratchet and confirm that the center of the ratchet is press-fitted into bottom of the shaft. (It can be used again.)
2) When attaching the Tension Regulator Band Assy, take care not to bend it.
3) Pay attention that oil or grease is not spit on the surface of the Tension Regulated Band. (Pay attention also not to touch it with hand directly.)
4) Confirm that the tension regulator band is correctly inserted into the groove of the S Reel Deck Assy ⑤. (Refer to Fig. b)
5) When securing the Tension Adjustment Block using the screw, press it toward the position which gives the least tension, then tighten the fixing screw.
6) Before attaching the TG1 Arm Assy, coat the LS Chassis TG1 boss with oil (1/2 drop).
7) Do not touch the tape guide of the TG1 Arm Assy with bare hands.
8) Confirm that the claw of the S Reel Deck Assy is not deformed.

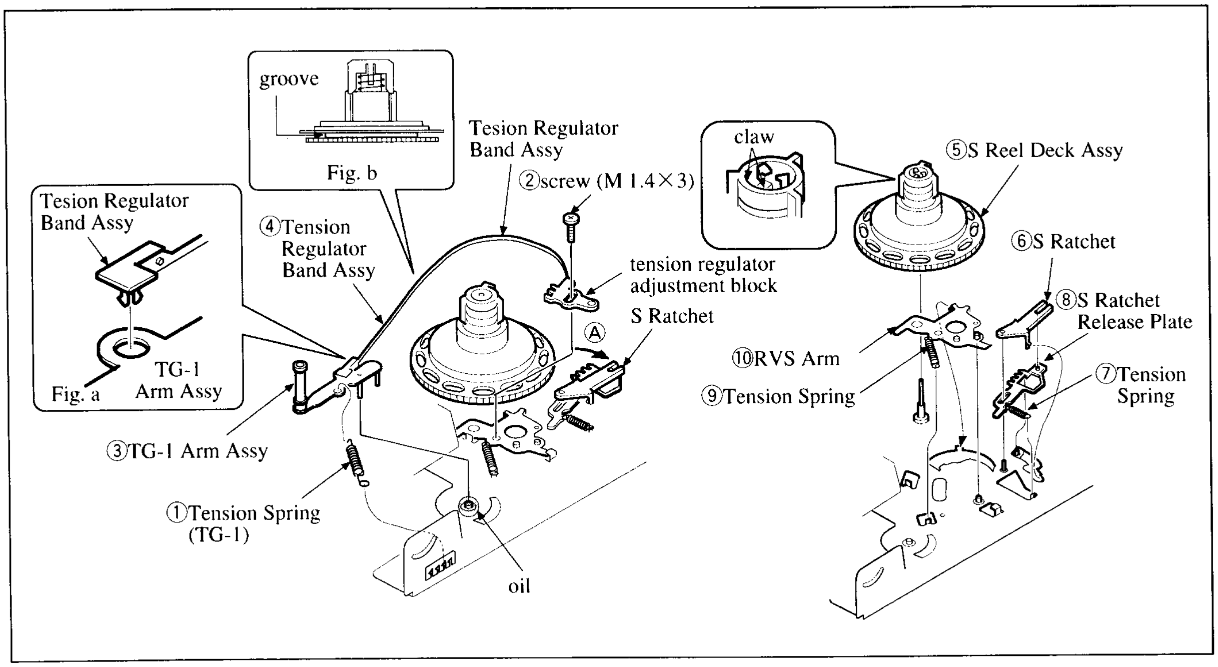

groove
Fig. b
Tesion Regulator Band Assy
②screw (M 1.4×3)
claw
⑤S Reel Deck Assy
Tesion Regulator Band Assy
④Tension Regulator Band Assy
⑥S Ratchet
tension regulator adjustment block
S Ratchet
Ⓐ
⑧S Ratchet Release Plate
TG-1 Arm Assy
Fig. a
⑩RVS Arm
⑨Tension Spring
⑦Tension Spring
③TG-1 Arm Assy
①Tension Spring (TG-1)
oil

Fig. 12

3-8. Pinch Arm Assy, TG4 Arm Block Assy (Refer to Fig. 13)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the Torsion Spring (pinch) ① from an end of Pinch Arm and hook it on the cut-out Ⓐ of the LS Chassis.
5) Remove the screw (M 1.4×2.5) ② and remove the TG4 Retainer ③.
6) Remove the TG4 Arm Block Assy ④ and remove the Torsion Spring ⑤ while paying attention to the Torsion Spring ⑤.
7) Remove the Pinch Arm Assy ⑥. (Caution: The Pinch Press Roller is easy to drop. Pay attention not to drop it.)
8) Remove the Torsion Spring (pinch) ① from the cut-out of the LS Chassis in the order of Ⓐ then Ⓑ.

2. Precautions During Re-Assembly

1) Before attaching these parts, coat the LS chassis pinch arm boss and TG4 arm boss with grease SG-055G (Ref. No. J-13).
2) Do not touch the tape guide of the TG4 Arm Block Assy and roller of the Pinch Arm Assy with bare hand.
3) After coating the Pinch Press Shaft of the Pinch Arm Assy ③ with grease SG-055G (Ref. No. J-13), attach the Pinch Press Roller.

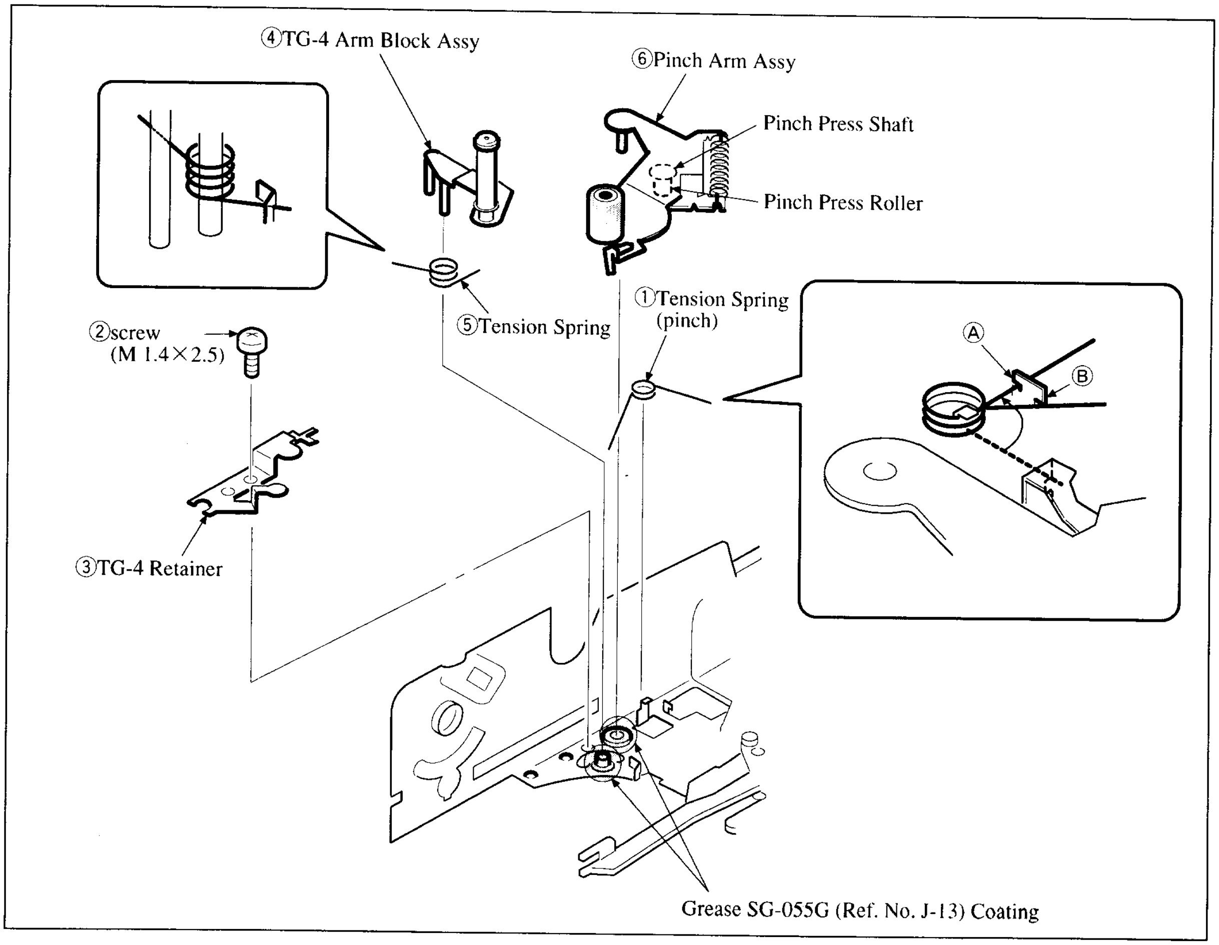

④TG-4 Arm Block Assy
⑥Pinch Arm Assy
Pinch Press Shaft
Pinch Press Roller
⑤Tension Spring
①Tension Spring (pinch)
②screw (M 1.4×2.5)
③TG-4 Retainer
Ⓐ
Ⓑ
Grease SG-055G (Ref. No. J-13) Coating

Fig. 13

3-9. LS Cam Plate, LS Guide Cover, Lid Opener, EJ Arm, Lock Guide
(Refer to Fig. 14)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) Remove the two screws (M 1.4×2.5) ① and remove the the LS Cam Plate ②.
   In this state, write a mark on the screw ① and on the LS Chassis indicating the position of the LS Cam Plate which helps during re-assembly.
5) Remove the LS Guide Cover ③.
6) Remove the Lock Guide ④ in the upward direction. (Refer to Fig. a)
7) Remove the Lid Open ⑤ in the direction of the arrow Ⓒ while pushing Ⓑ portion .
8) Remove the EJ Arm ⑥ . (The EJ Arm ⑥ is press-fitted. If the EJ Arm ⑥ is not damaged, it is not necessary to replace.)

2. Precautions During Re-Assembly

1) After the captioned parts are attached, confirm that the respective claws and dowels are engaged completely.
2) If the EJ Arm ⑥ is removed, be sure to replace it with the new replacement EJ Arm.
3) If any mark is not written when removing the LS Cam Plate ②, adjust and attack it as shown in Fig. b.

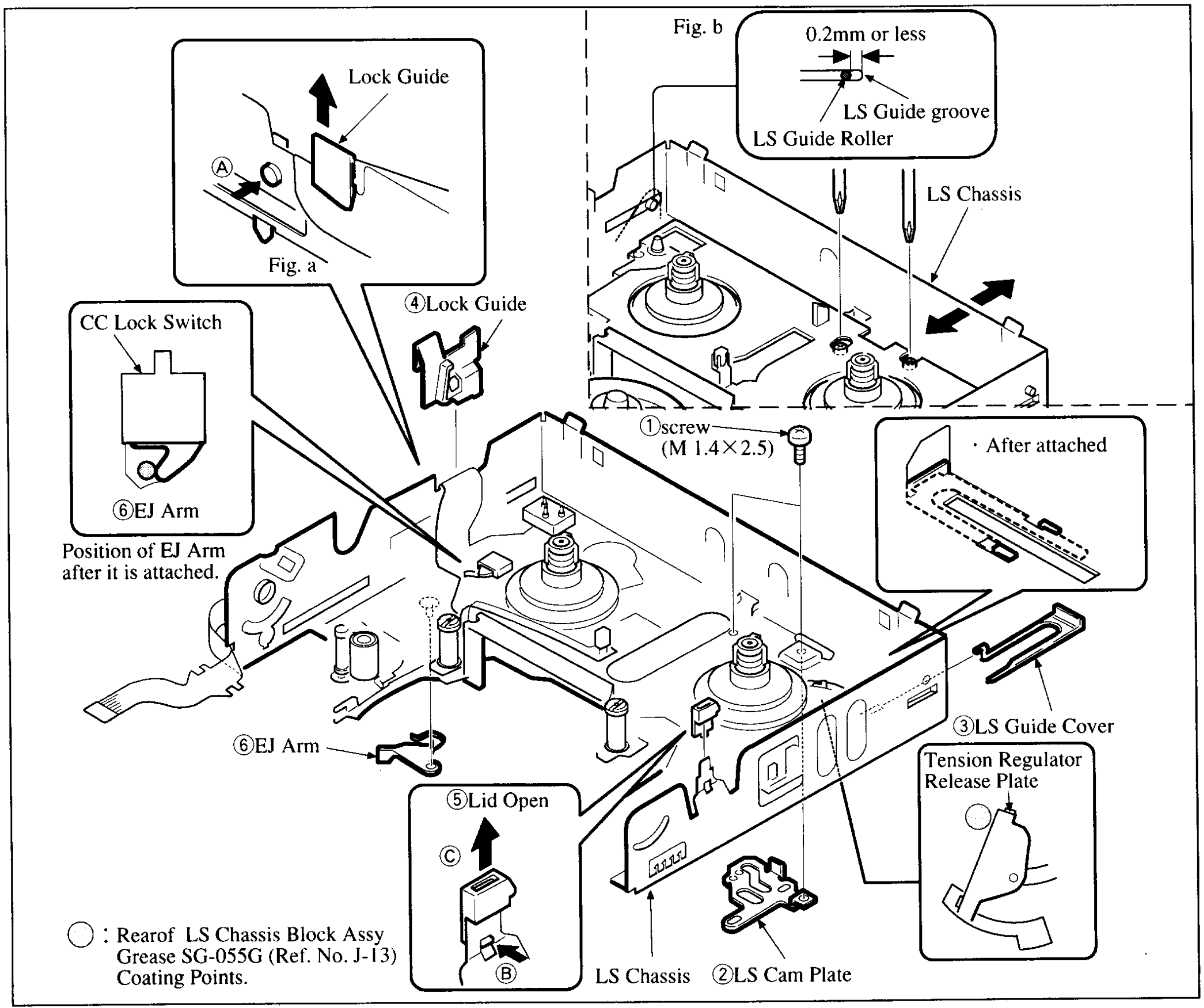

Lock Guide
Ⓐ
Fig. a
④Lock Guide
CC Lock Switch
⑥EJ Arm
Position of EJ Arm after it is attached.
Fig. b
0.2mm or less
LS Guide groove
LS Guide Roller
LS Chassis
①screw (M 1.4×2.5)
· After attached
③LS Guide Cover
Tension Regulator Release Plate
⑥EJ Arm
⑤Lid Open
Ⓒ
Ⓑ
○ : Rearof LS Chassis Block Assy Grease SG-055G (Ref. No. J-13) Coating Points.
LS Chassis
②LS Cam Plate

Fig. 14

3-10. Guide Base (S) and (T) Block Assemblies, Guide Rail (Refer to Fig. 15)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
3) Remove the LS Chassis Block Assy referring to section 3-5.
4) While pushing the GB Stoppers (S) and (T) in the direction of arrow Ⓐ, press the guide arm in the direction of the arrow Ⓑ, and turn the Guide Base (S) and (T) Block Assemblies : ① and ② in the direction of the arrow Ⓒ respectively, and remove them.
5) Remove the two screws (M 1.4×2.5) ③ and remove the the Guide Rail Assy ④.
6) Remove the Stopper (S) and (T) : ⑤ and ⑥, then remove the GB Stopper S and T: ⑦ and ⑧.

2. Precautions During Re-Assembly

1) Pay attention not to deform the Guide Rail.
2) Do not touch the tape guide of the Guide Base (S) and (T) Block Assemblies with bare hand.
3) Pay attention not to deform the Stoppers (S) and (T).
4) When attaching the Guide Base (S) and (T) Blocks to the Guide Rail, move back the Guide Bases until the GB Stoppers (S) and (T) are locked. ("Click" sounds.)
5) After the captioned parts are attached, perform section "4. TAPE PATH ADJUSTMENT".

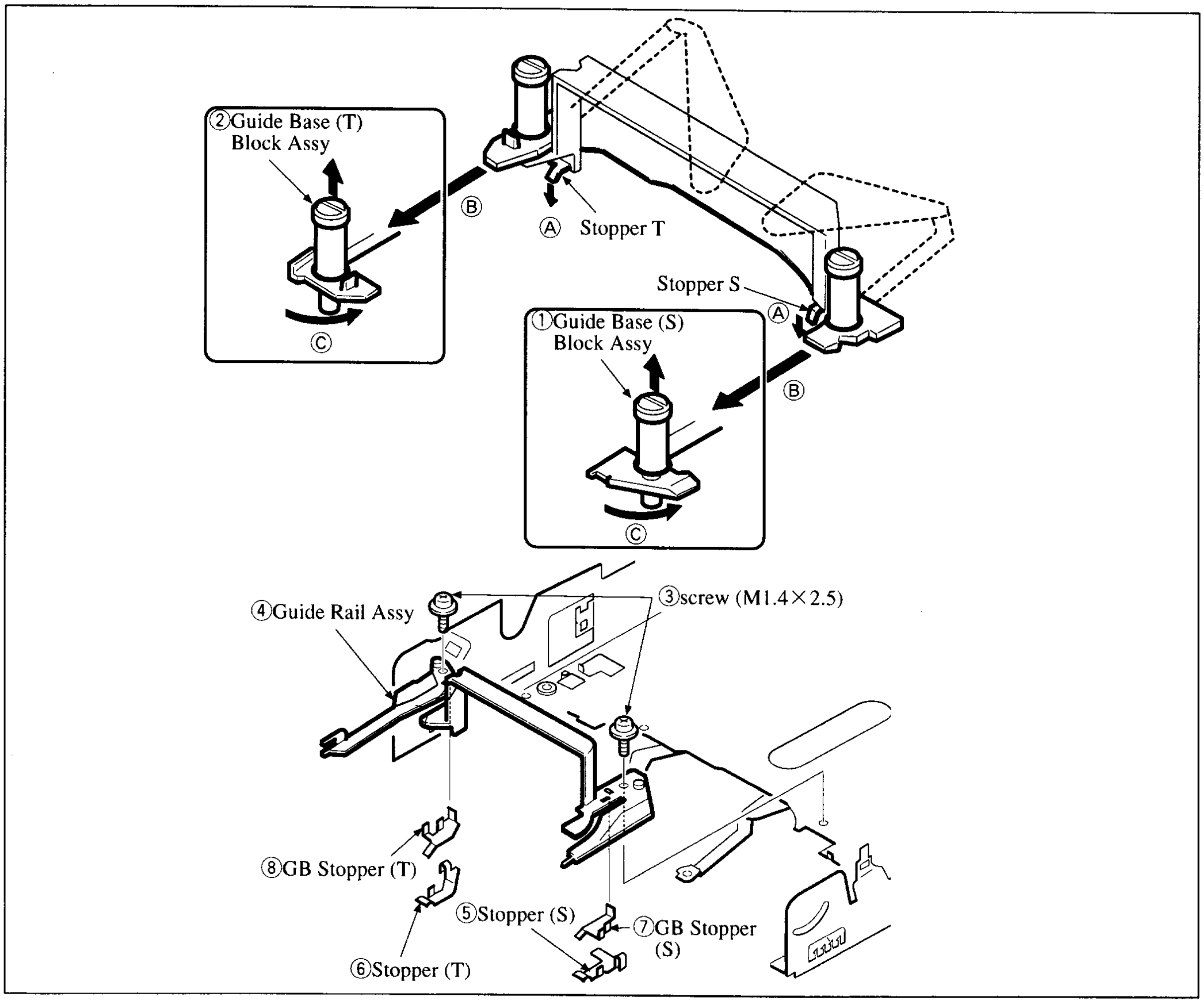

②Guide Base (T)
Block Assy
Ⓑ
Ⓒ
Ⓐ Stopper T
Stopper S
Ⓐ
①Guide Base (S)
Block Assy
Ⓑ
Ⓒ
④Guide Rail Assy
③screw (M1.4×2.5)
⑧GB Stopper (T)
⑤Stopper (S)
⑦GB Stopper
(S)
⑥Stopper (T)

Fig. 15

- **PARTS CONSTITUTING THE MECHANISM CHASSIS**

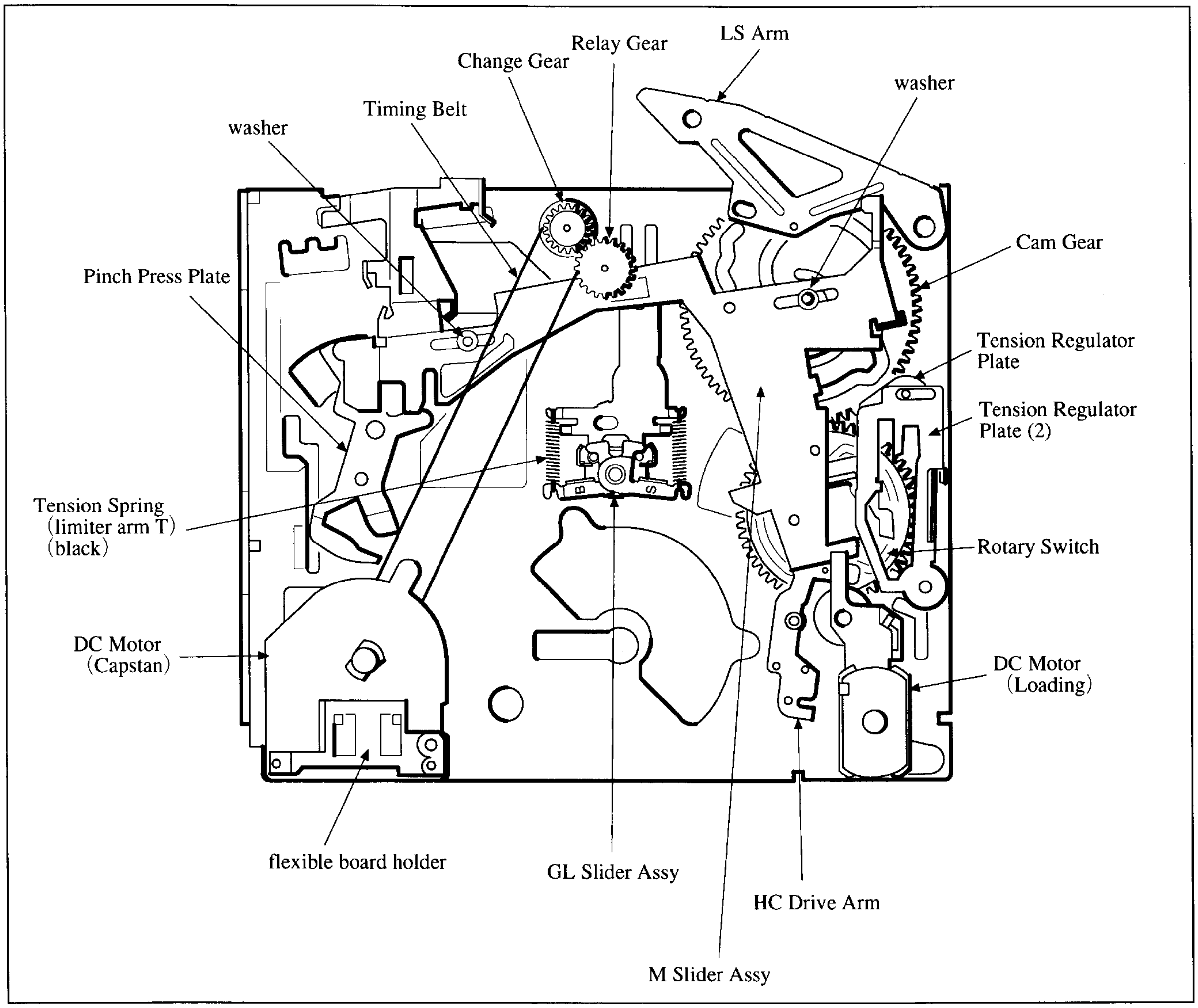

Relay Gear
LS Arm
Change Gear
washer
Timing Belt
washer
Cam Gear
Pinch Press Plate
Tension Regulator Plate
Tension Regulator Plate (2)
Tension Spring (limiter arm T) (black)
Rotary Switch
DC Motor (Capstan)
DC Motor (Loading)
flexible board holder
GL Slider Assy
HC Drive Arm
M Slider Assy

Fig.16

3-11. DC Motor Assy (Loading)
(Refer to Fig. 17)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove soldering from the Ⓐ portion.
8) Remove the screw (M 1.4×2.5) ① and remove the Motor Holder Block Assy ② from the mechanism chassis along with the claw beneath the Motor Holder Block Assy as shown by the arrow Ⓑ.
9) Remove the Motor Shield ③ in the direction of the arrow Ⓒ (by opening the two ★ star marked points).
10) Release the claw on top of the Motor Holder ⑤ and remove the DC Motor Assy ④ in the direction of the arrow Ⓓ.
11) Remove the Motor Holder Sleeve ⑥, Gear A⑦ and Worm Shaft ⑧ in this order.

2. Precautions During Re-Assembly

1) Before attaching the Gear A ⑥, coat the Retainer Shaft Ⓔ with grease SG-055G (Ref. No. J-13).
2) After assembling the Motor Holder Block Assy, coat the six locations shown by Fig. a with grease SG-055G (Ref. No. J-13).
3) The HC Drive Arm is easy to drop. Confirm that it is attacked referring to Fig. 19.

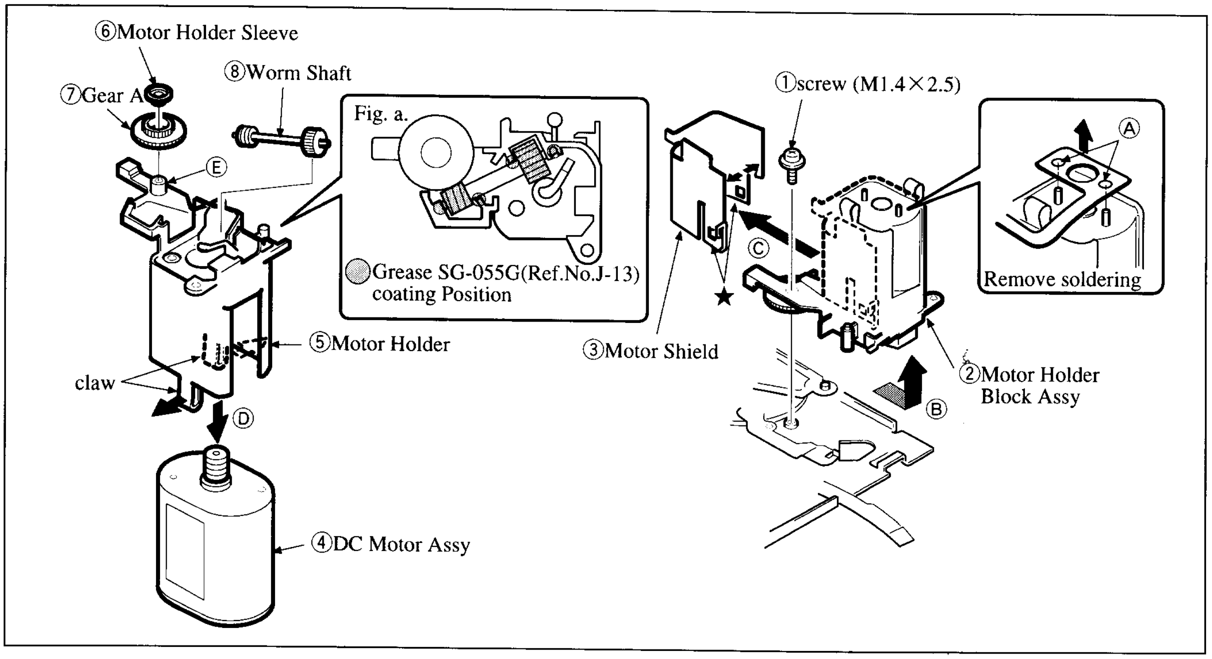

⑥Motor Holder Sleeve
⑧Worm Shaft
⑦Gear A
Ⓔ
Fig. a.
●Grease SG-055G(Ref.No.J-13) coating Position
⑤Motor Holder
claw
Ⓓ
④DC Motor Assy
③Motor Shield
Ⓒ
★
①screw (M1.4×2.5)
Ⓐ
Remove soldering
②Motor Holder Block Assy
Ⓑ

Fig. 17

3-12. Tension Regulator Plate 2, Relay Gear, M Slider Assy (Refer to Fig. 18)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC motor referring to section 3-11.
8) Remove the Tension Regulator Plate 2 ①.
9) Remove the Relay Gear ②.
10) Remove the two washers ③. Remove the M Slider Assy ④. At the point, confirm that the LS Roller ⑤ is not dropped.

2. Precautions During Re-Assembly

1) Before attaching the M Slider Assy ④, coat the LS Roller Shaft Ⓐ on the back of the M Slider Assy, the Pinch Press Plate Shaft Ⓑ and the mechanism chassis M Slider Axis Ⓒ with grease SG-055G (Ref. No. J-13). (Refer to Fig. b)
2) While confirming the phase-determining holes, attach the M Slider Assy ④ while paying attention to the claw.
3) Attach the Tension Regulator Plate 2 ① inside the Tension Regulator Plate. (Refer to the asterisk * Marked portion of Fig. a)
4) Before attaching the Relay Gear ②, coat the mechanism chassis Relay Gear Axis Ⓓ with grease SG-055G (Ref. No. J-13).

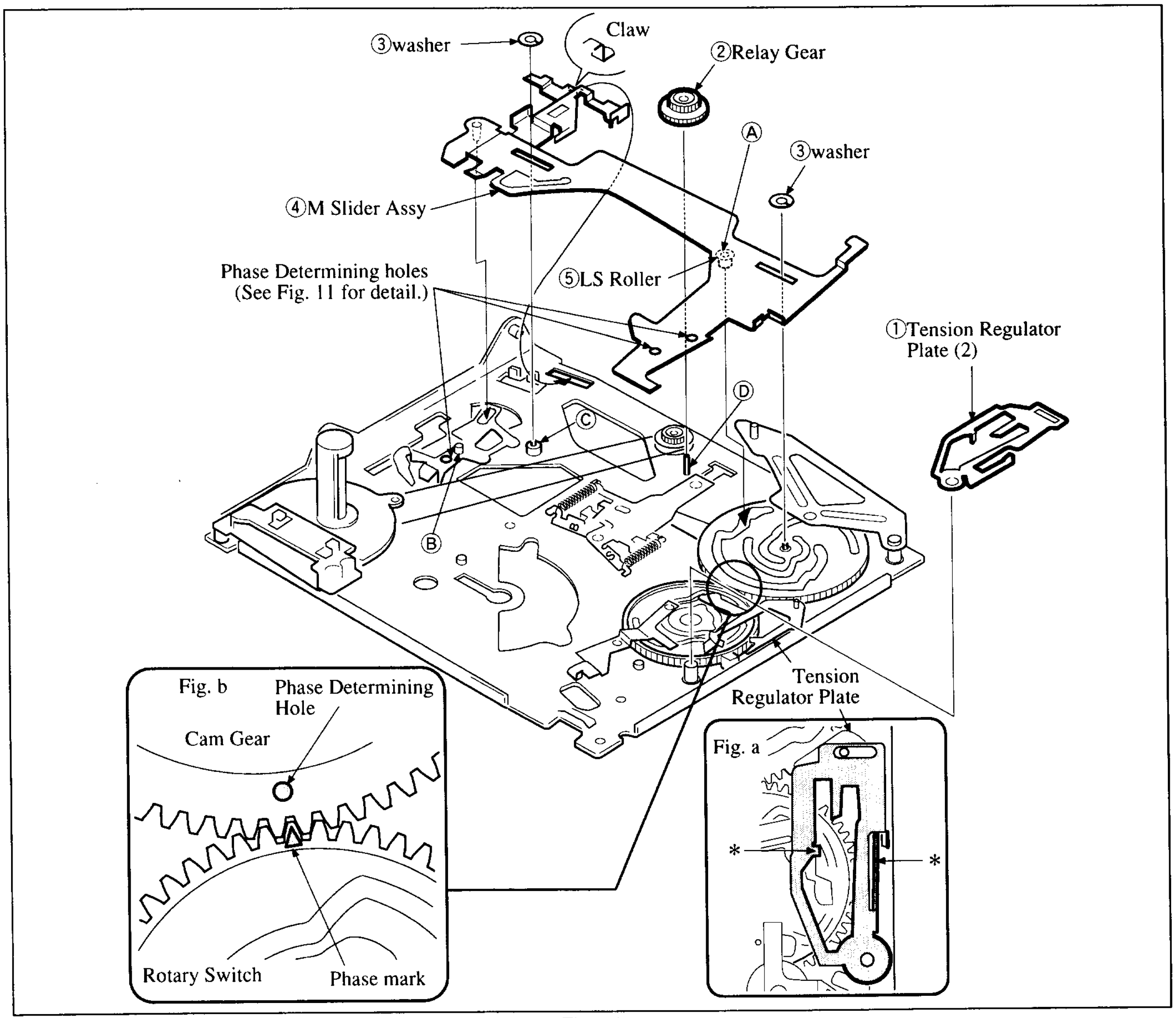

③washer
Claw
②Relay Gear
Ⓐ
③washer
④M Slider Assy
Phase Determining holes
(See Fig. 11 for detail.)
⑤LS Roller
①Tension Regulator Plate (2)
Ⓓ
Ⓒ
Ⓑ
Tension Regulator Plate
Fig. b
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Fig. a
*
*

Fig. 18

3-13. LS Arm, HC Drive Arm, Pinch Press Plate, Tension Regulator Plate (Refer to Fig. 19)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm ①. At this point, confirm that the LS Roller ② is not dropped.
10) Remove the HC Drive Arm ③, Pinch Press Plate ④ and Tension Regulator Plate ⑤.

2. Precautions During Re-Assembly

1) Before attaching the captioned parts, confirm that phases of the Cam Gear and the Rotary Switch agree. (See Fig. a.)
2) Insert the dowel of the Tension Regulator Plate ⑤ into the groove outside the rotary switch.
3) Before attaching the Pinch Press Plate ④, check for grease on the mechanism chassis Pinch Press Plate Shaft Ⓐ. If grease cannot be found, coat it with grease SG-055G (Ref. No. J-13). After attaching the Pinch Press Plate ④, align its phase hole until it agrees with the phase-determining hole on the mechanism chassis.
4) Insert the dowel of the HC Drive Arm ③ into the groove inside the rotary switch.
5) Before attaching the LS Arm ①, coat the LS roller shaft of the LS Arm ① with grease SG-055G (Ref. No. J-13).

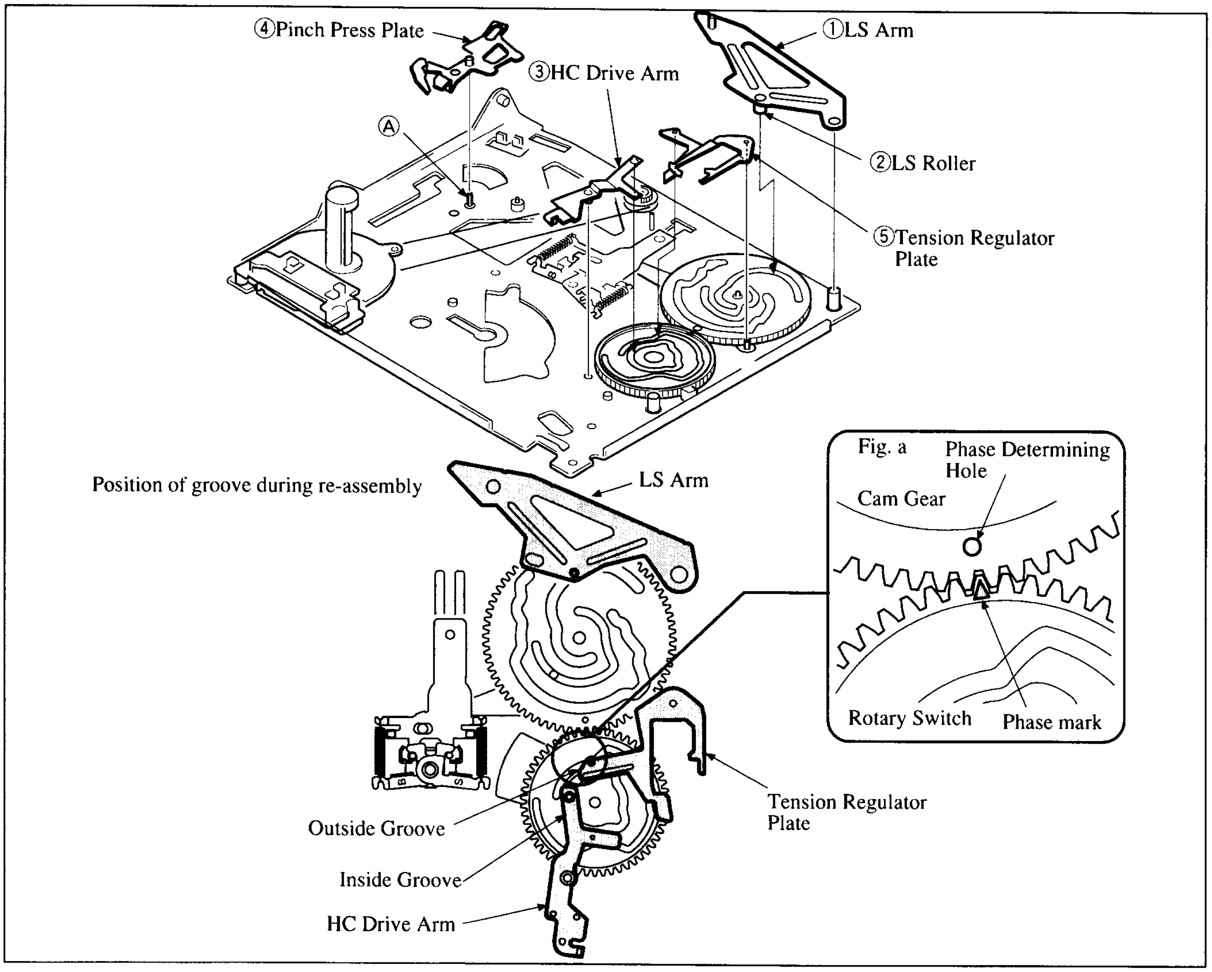

④Pinch Press Plate
③HC Drive Arm
①LS Arm
Ⓐ
②LS Roller
⑤Tension Regulator Plate
Position of groove during re-assembly
LS Arm
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
Tension Regulator Plate
Outside Groove
Inside Groove
HC Drive Arm

Fig. 19

3-14. Cam Gear (Refer to Fig. 20)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear ①.

2. Precautions During Re-Assembly

1) Before attaching the Cam Gear ①, align the phase mark on the rotary switch until it agrees with the phase-determining hole Ⓐ on the mechanism chassis, and align the GL Arm's phase mark Ⓑ until it agrees with the phase-determining hole Ⓐ on the mechanism chassis. Coat the mechanism's chassis Gear Axis Ⓐ with grease SG-055G (Ref. No. J-13).
2) Attach the Cam Gear ① so that its phase hole agrees with the phase mark on the rotary switch. (Refer to Fig. a)
3) After the Cam Gear ① is attached, coat the GL Arm Axis Block of the cam gear with grease SG-055G (Ref. No. J-13).

Reference : The phase marks of the Cam Gear and Rotary Switch can also be checked from the rear side of mechanism chassis. It means that the phase can be confirmed after mechanism deck is fully re-assembled.

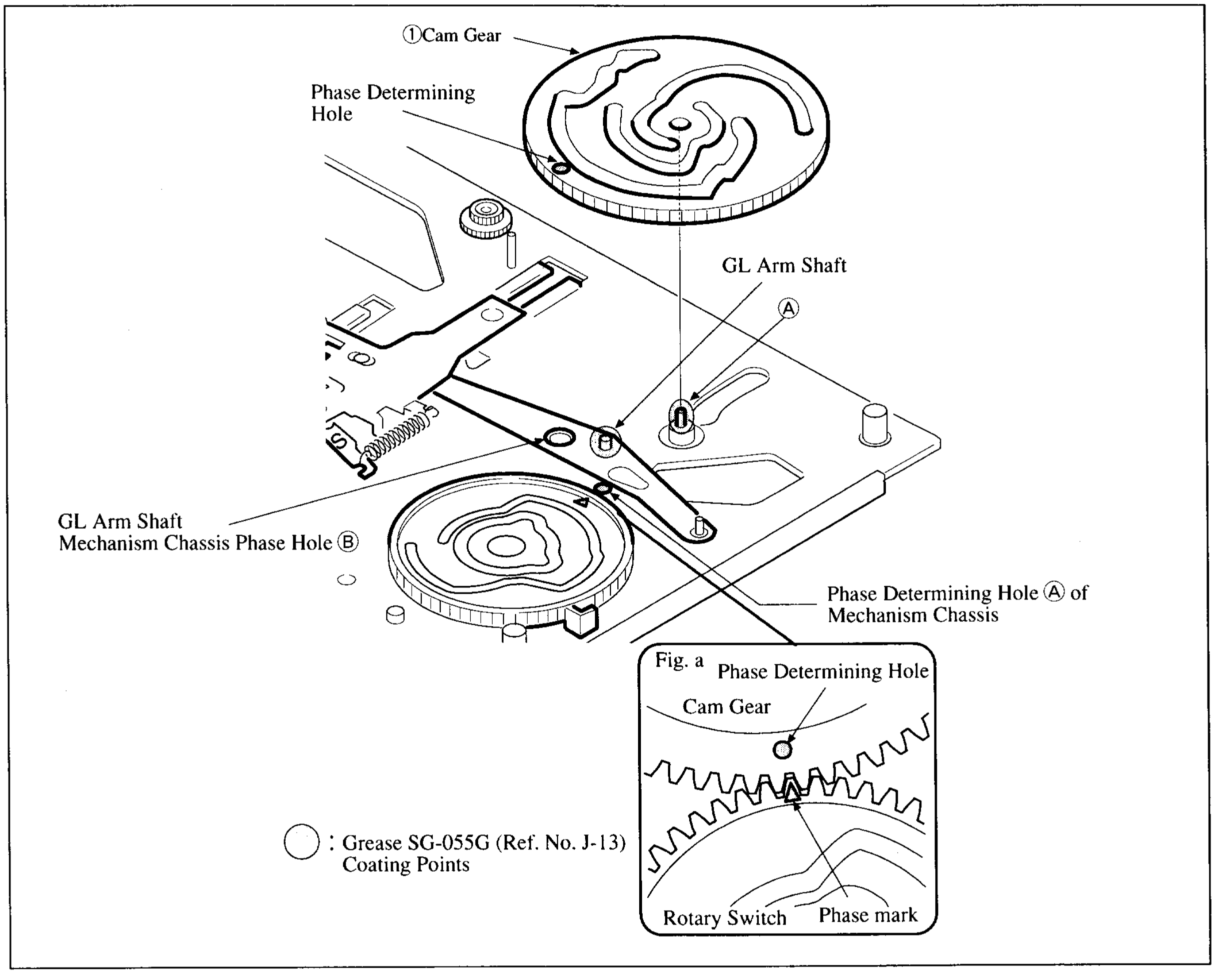

①Cam Gear
Phase Determining Hole
GL Arm Shaft
Ⓐ
GL Arm Shaft
Mechanism Chassis Phase Hole Ⓑ
Phase Determining Hole Ⓐ of Mechanism Chassis
Fig. a
Phase Determining Hole
Cam Gear
Rotary Switch
Phase mark
○ : Grease SG-055G (Ref. No. J-13) Coating Points

Fig. 20

3-15. GL Slider Assy, GL Arm (Refer to Fig. 21)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm and Tension Regulator Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove the GL Slider Assy ① by sliding it in the direction of the arrow Ⓐ.
12) Remove the GL Arm ②.

2. Precautions During Re-Assembly

1) The Tension Spring T③ is colored black and the Tension Spring S④ is colored silver.
2) Coat the position shown in Fig. a of the GL Slider Assy ① with grease SG-055G (Ref. No. J-13).
3) Coat the four points Ⓑ where GL slider is attached on the mechanism chassis with grease SG-055G (Ref. No. J-13).
4) After attaching the GL Arm ② and the GL Slider Assy, align the GL arm phase hole until it agrees with the phase-determining hole on the mechanism chassis.

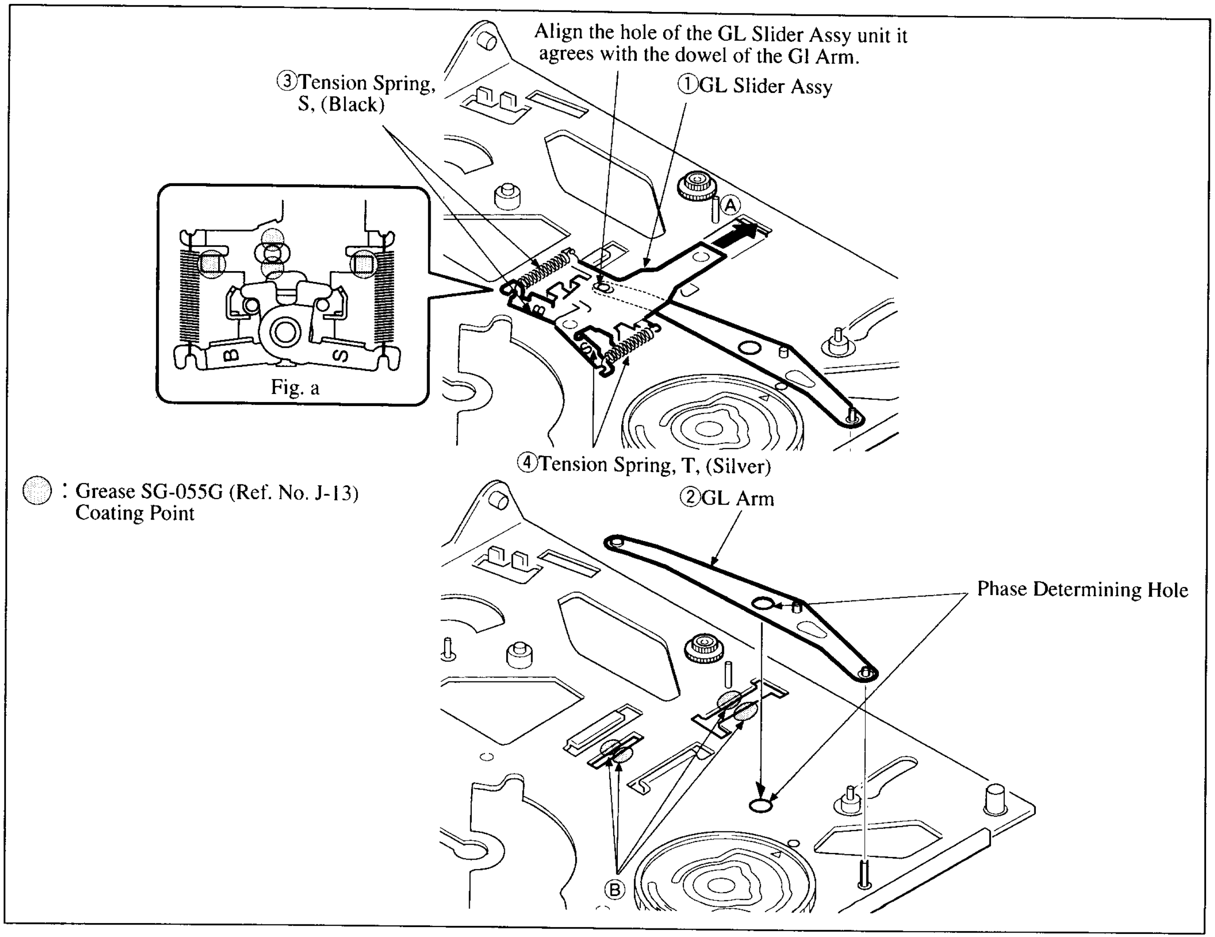

Align the hole of the GL Slider Assy unit it agrees with the dowel of the Gl Arm.
③Tension Spring, S, (Black)
①GL Slider Assy
Ⓐ
B
S
Fig. a
④Tension Spring, T, (Silver)
②GL Arm
● : Grease SG-055G (Ref. No. J-13) Coating Point
Phase Determining Hole
Ⓑ

Fig. 21

3-16. Rotary Switch (Refer to Fig. 22)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the LS Arm, Tension Regulator Plate, HC Drive Arm and Pinch Press Plate referring to section 3-13.
10) Remove the Cam Gear referring to section 3-14.
11) Remove soldering the portion Ⓐ on the rear of the Rotary Switch. (Pay attention at this moment that the GL Slider and GL Arm do not drop.)
12) While lifting up the portion Ⓑ about 1 mm (pay attention not to break it), hold the portion Ⓒ and turn it in the direction of the arrow Ⓓ to remove the Rotary Switch.

2. Precautions During Re-Assembly

1) Before attaching the Rotary Switch by soldering on the FP-220 board, insert the portion Ⓑ dowel into the hole on the mechanism chassis. Confirm that the three claws are engaged with the mechanism chassis.

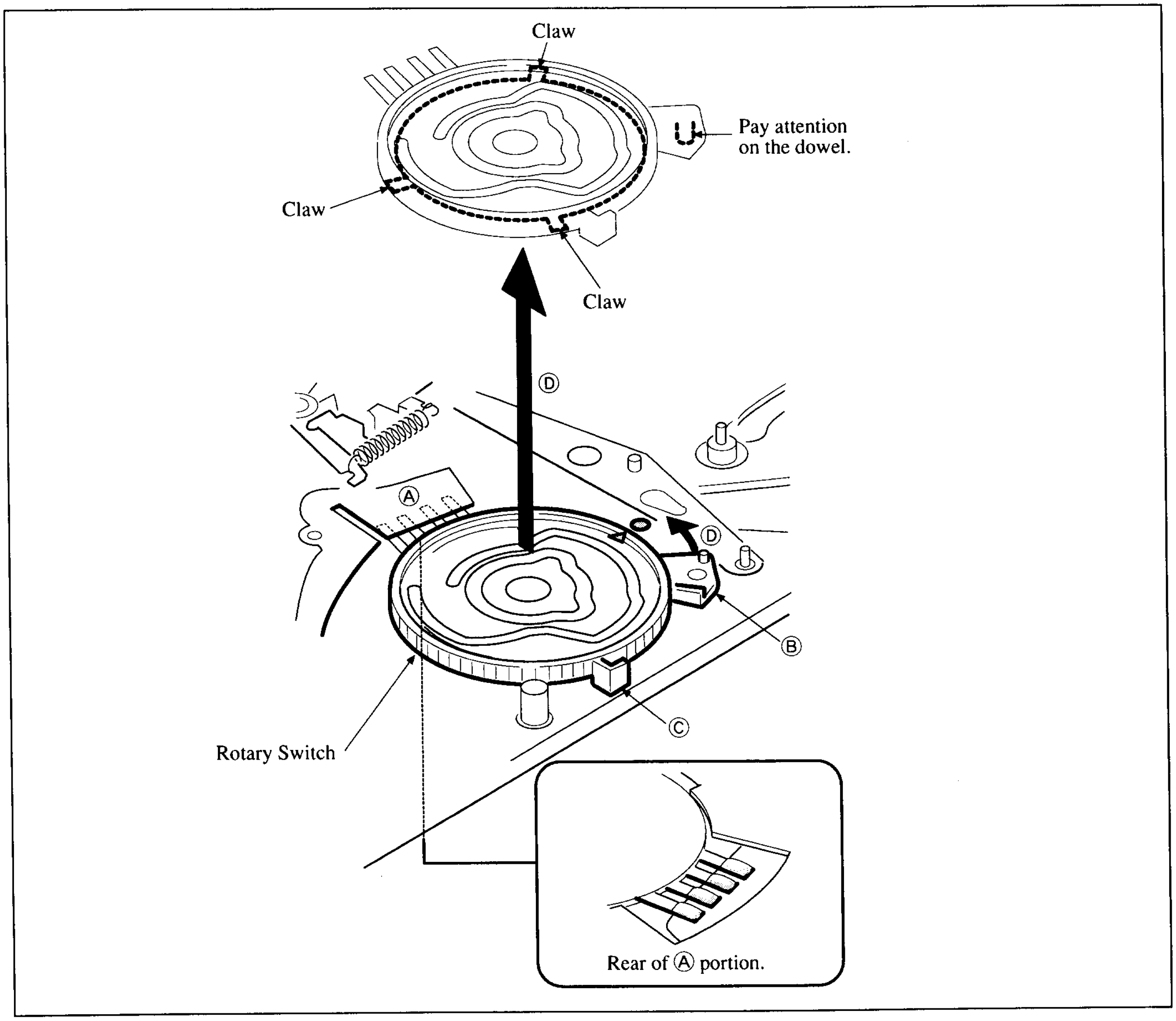


Fig. 22

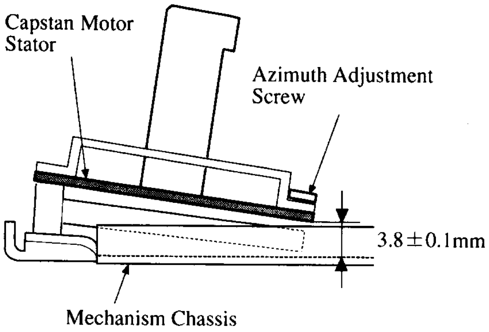
3-17. Capstan Motor (Refer to Fig. 23)

1. Disassembly Procedure

1) Remove the Cassette Compartment Block Assy referring to section 1-1.
2) Remove the HC Roller Block Assy referring to section 3-1.
3) Remove the Drum Assy referring to section 3-2.
4) Remove the Drum Base Block Assy referring to section 3-3.
5) Remove the Gooseneck Retainer and Gooseneck Gear Assy referring to section 3-4.
6) Remove the LS Chassis Block Assy referring to section 3-5.
7) Remove the DC Motor Assy referring to section 3-11.
8) Remove the Tension Regulator Plate 2, Relay Gear and M Slider Assy referring to section 3-12.
9) Remove the Pinch Press Plate referring to section 3-13.
10) Remove the screw (M 1.4×6.7) ① and remove the Flexible Board Holder ②.
11) Remove the two screws (M 1.4×6.7) ③ and remove the Capstan Motor ④, Timing Belt ⑤ and Capstan Spacer ⑥.
12) Remove the washer ⑦ and remove the Changer Gear ⑧.

2. Precautions During Re-Assembly

1) Confirm that the timing belt is not twisted.
2) Do not touch the capstan with bare hand.
3) Lubricate the mechanism chassis's Change Gear shaft Ⓐ.
4) After attaching the Capstan Motor, perform the capstan azimuth adjustment.


Capstan Motor Stator
Azimuth Adjustment Screw
3.8±0.1mm
Mechanism Chassis

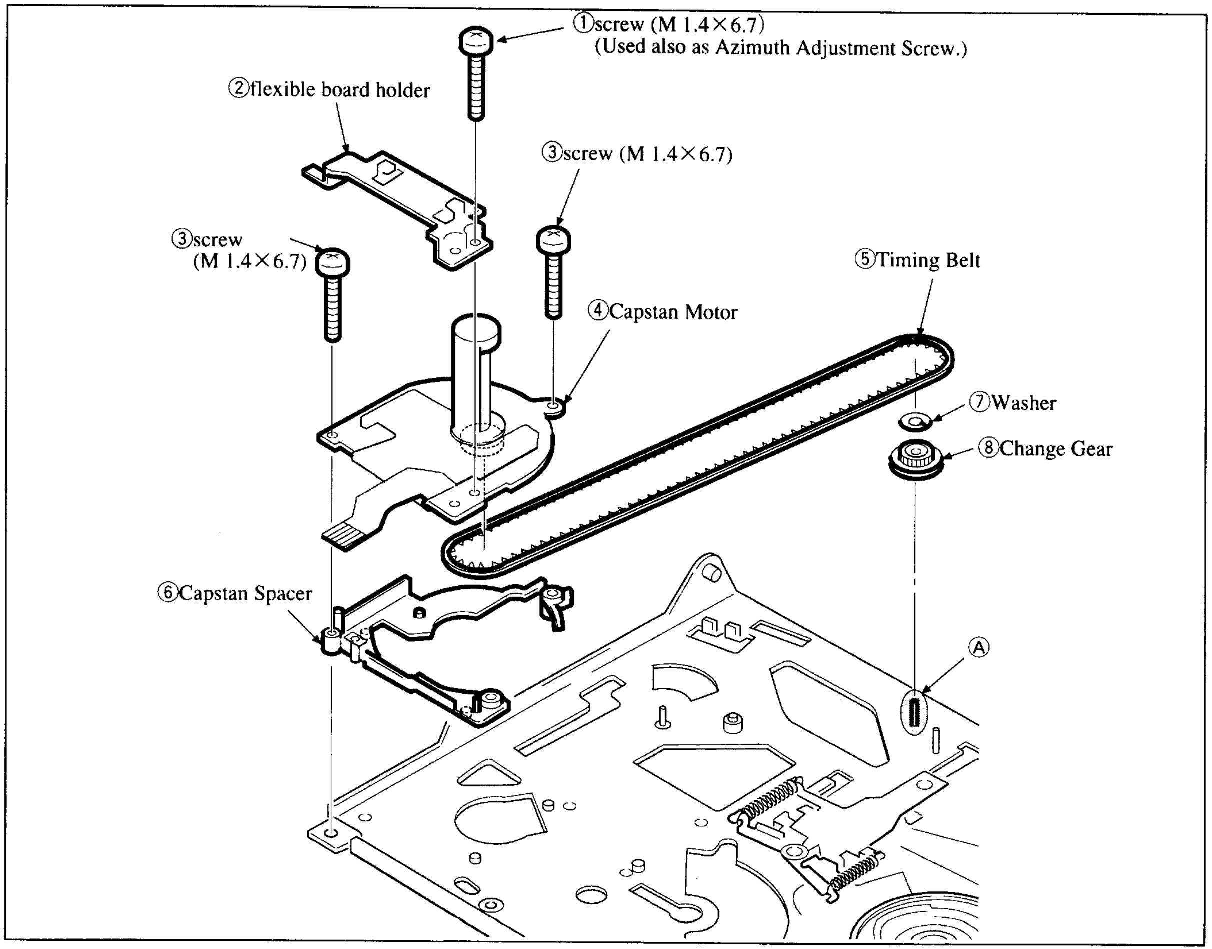

①screw (M 1.4×6.7)
(Used also as Azimuth Adjustment Screw.)
②flexible board holder
③screw (M 1.4×6.7)
③screw
(M 1.4×6.7)
⑤Timing Belt
④Capstan Motor
⑦Washer
⑧Change Gear
⑥Capstan Spacer
Ⓐ

Fig. 23

3-18. Tension Regulator Position Adjustment (Refer to Fig.24)

1. Adjustment Procedure

1) Insert a cassette Tape and run the Tape in PB mode.
2) While tape is running, confirm that the distance between the LS Chassis and TG-1 Guide's top flange is 8.3mm.
3) If not, proceed to step 4).
4) Loosen the screw ① (M 1.4×3).
5) If the TG-1 Guide is located inside the specified position, move position of the Tension Regulator Band Assy using the FWD B.T. Adjustment tool screwdriver (Ref. No. J-9) as shown in the direction of the arrow Ⓐ. If it is located outside, move it in the direction of the arrow Ⓑ.
6) Tighten the screw ① (M 1.4×3).

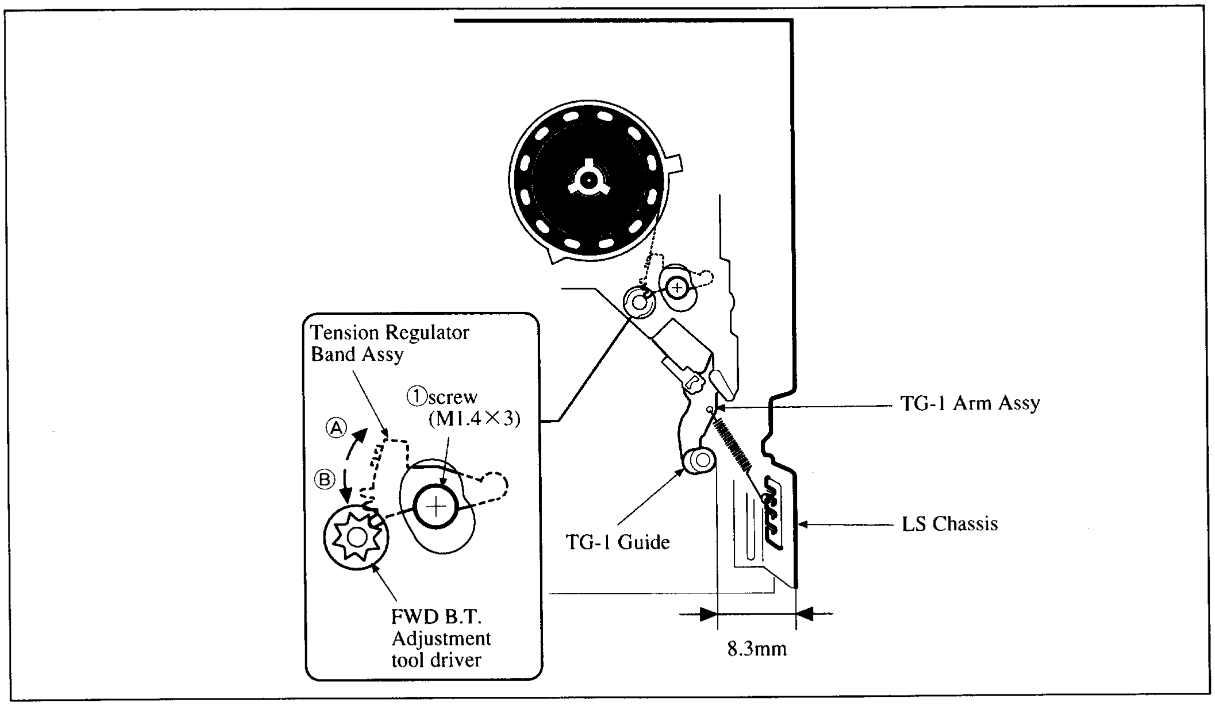

Tension Regulator Band Assy
①screw (M1.4×3)
Ⓐ
Ⓑ
FWD B.T. Adjustment tool driver
TG-1 Guide
TG-1 Arm Assy
LS Chassis
8.3mm

Fig.24

3-19. FWD Tape Hold-Back Tension Adjustment (Refer to Fig. 25)

1. Adjustment Procedure

1) Insert the torque measurement cassette to the machine.
2) Put the machine in the FWD mode. Confirm that the reading on the S side is in the range from 8.0 to 10.5 g•cm. If the reading is outside the specification range, make the following adjustments.
3) If the reading is higher than the specification, change the TG-1 Tension Spring to the side Ⓐ.
4) If the reading is lower than the specification, change the TG-1 Tension Spring to the side Ⓑ.

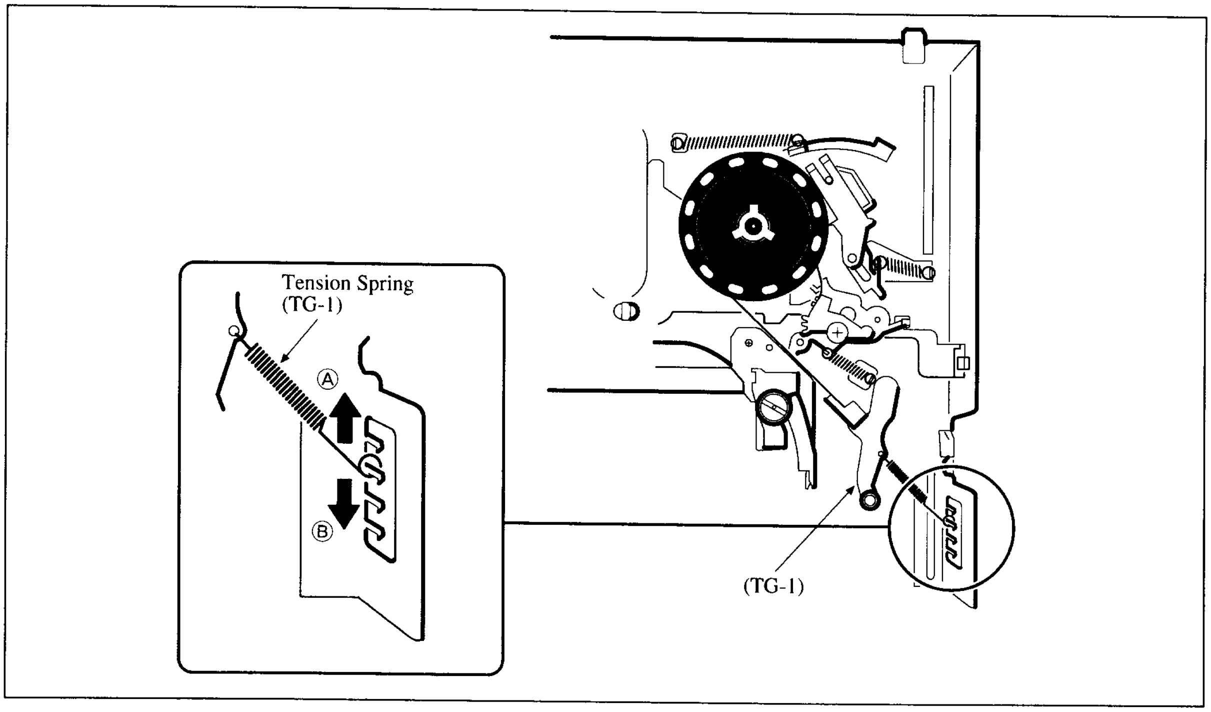


Fig. 25

4. TAPE PATH ADJUSTMENT

Purpose:	Adjusts the head linearity.
Adjustment Error:	Noise appears on top and bottom of display when playing back the tape recorded by other machines.

4-1. Preparations for Adjustments

1) Clean the tape running surface (tape guide, drum, capstan, pinch roller).
2) Connect the adjustment remote commander to the REMOTE terminal (JACK block).
3) Establish the PATH mode using the adjustment remote commander (Track Shift mode)* to cancel auto tracking.
4) Connect an oscilloscope.
   CH1: Test connector PB RF terminal
   External trigger: Test connector PB SWP terminal
5) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
6) Check to see that RF waveform is flat at input and exit sides on oscilloscope.
   If it not flat, perform the following section 4-2 until it is flat.
7) After completing the adjustment, release the PATH mode (Track Shift mode).*.

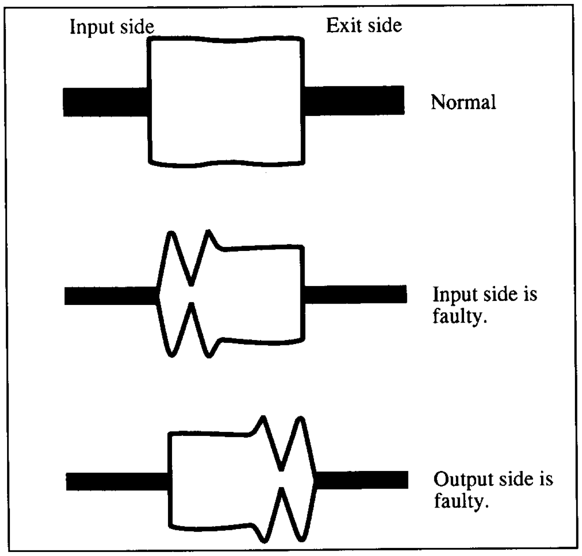


Fig. 26

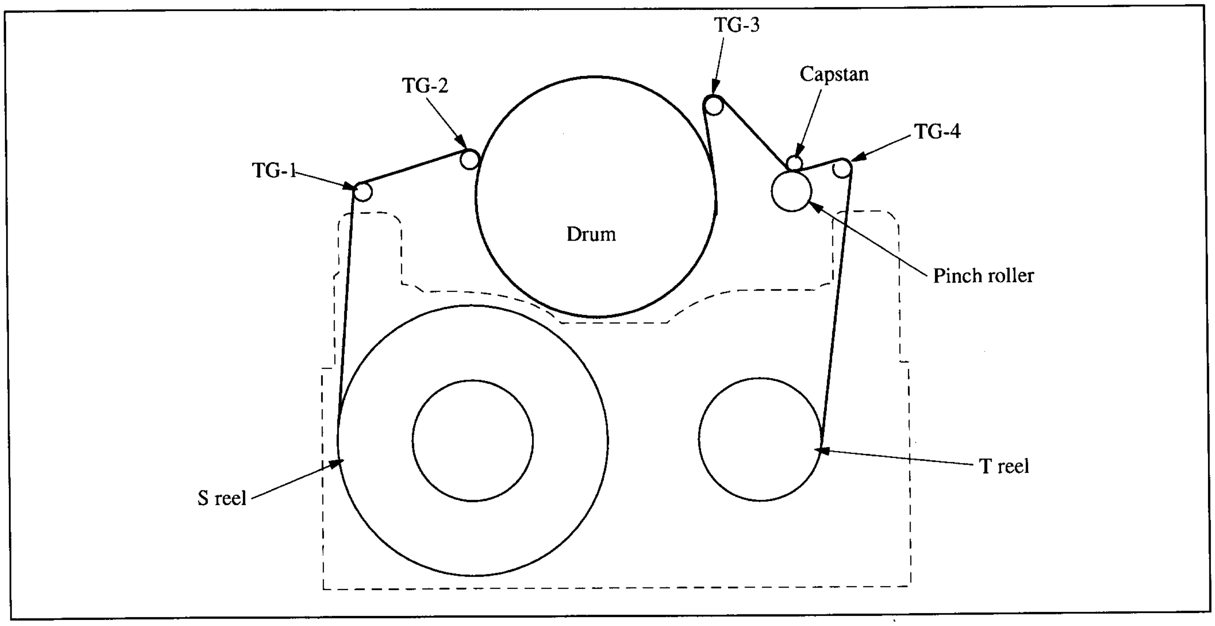


Fig. 27

* How to enter and exit the Track Shift mode. (In the case of CCD-TR420E/TR440E)

Entering the Track Shift mode

1. Select page : 6, address : 00 set data : 01 and press the PAUSE button.
2. Select page : 7, address : 01 set data : 03 and press the PAUSE button.

Exitting the Track Shift mode

1. Select page : 7, address : 01 set data : 00 and press the PAUSE button.
2. Select page : 6, address : 00 set data : 00 and press the PAUSE button.

4-2. Tracking Adjustment (Refer to Fig. 28.)

1) Playback the tracking alignment tape WR5-1NP (NTSC) or WR5-1CP (PAL) (Ref. No. J-6).
2) Adjust the tape guide No. 2 until the input side waveform becomes flat.
3) Adjust the tape guide No. 3 until the input side waveform becomes flat.

☆ Zenith adjustment screws for the TG-2 and TG-3 do not need to be adjusted.

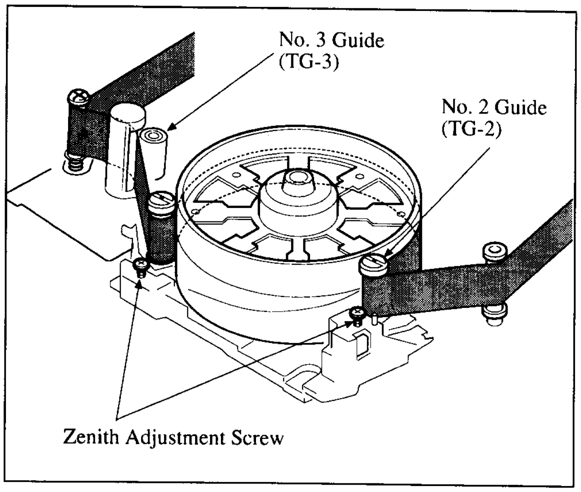


Fig. 28

4-3. No. 4 Guide (TG-4) Adjustment (Refer to Fig. 29.)

1) Playback a tape in REV mode.
2) Confirm that tape slack does not occur in between the guide No. 3 (TG-3) ① and Capstan ②. If tape slack is found, turn the height adjustment screw ④ of the Guide No. 4 (TG-4) ③ until tape slack is removed.
3) Playback a tape in FWD mode. Confirm that tape slack does not occur in between the guide No. 4 (TG-4) ③ and capstan ②. (Specification = 0.5 mm or less) If tape slack of more than 0.5 mm is found, turn the TG-4 nut ④ until the slack is 0.5 mm or less. Playback tape in REV mode and confirm that tape slack in between the guide No. 3 (TG-3) ① and capstan ② is 0.3 mm or less, the adjustment is complete.

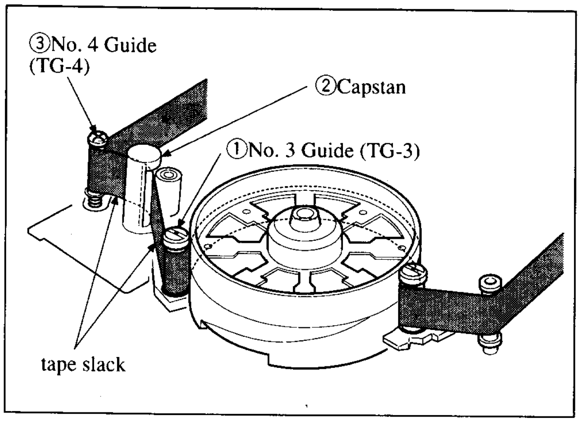


Fig. 29

4-4. CUE, REV Waveforms Check (Refer to Fig. 30.)

1) Playback the tracking alignment tape in REV mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform sections "4-2. Tracking Adjustment" and section "4-3. No. 4 Guide Adjustment".
2) Playback the tracking alignment tape in CUE mode.
   Confirm that pitches between the peaks of the waveform are equally spaced for 5 seconds or longer.
   The pitches are not equally spaced, perform section "4-2. Tracking Adjustment".

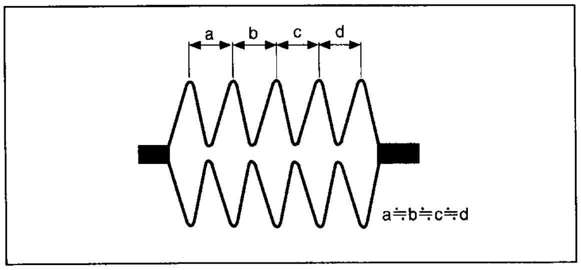


Fig. 30

4-5. Checks After Adjustments

4-5-1. Tracking Check

1) Confirm that amplitude of the RF waveform decreases to about 3/4 when the machine enters the PATH mode. (Refer to Fig. 31)
2) Confirm that the minimum amplitude (EMIN) of the RF waveform is 65 % or more of the maximum amplitude (EMAX). (Refer to Fig. 32)
3) Confirm that the RF waveform does not have too much fluctuation. (Refer to Fig. 33)

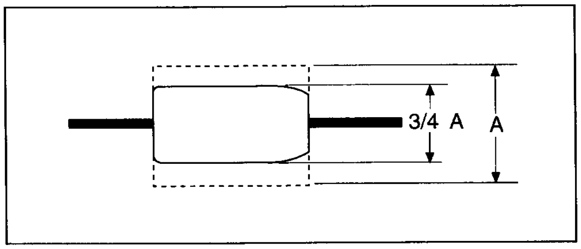


Fig. 31

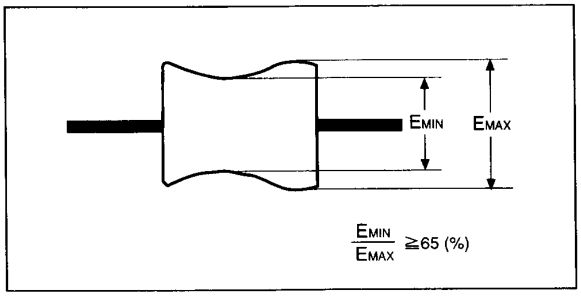


Fig. 32

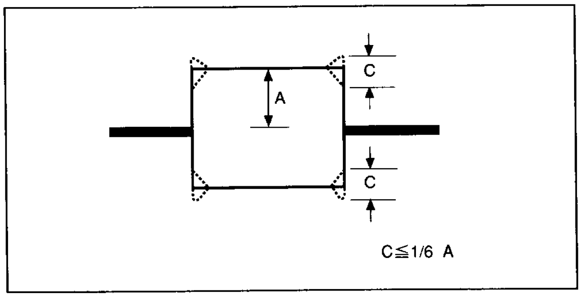


Fig. 33

4-5-2. Waveform Build-up Check (Refer to Fig. 34.)

1) Playback the tracking alignment tape.
2) Turn OFF the Track Shift mode.
3) Eject the tape once, insert and load the tape.
4) Start playing back the tape and confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
5) Playback the tape in CUE/REV and FF/REW modes respectively. Confirm that the RF waveform builds up in three seconds with flat envelope. Confirm at this time that tape slack does not occur near pinch roller.
6) Repeat the check items 3) to 5) again.

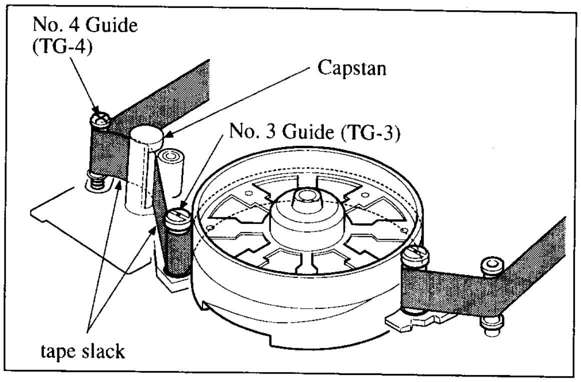


Fig. 34

4-5-3. Tape Pass Check (Refer to Fig. 35.)

1) Insert a thin video tape such as P6-120MP (NTSC) or P5-120MP (PAL). Playback the thin tape. Confirm that there is no clearance or curl of 0.3 mm or more at the following points: Upper flange of guide No. 2, upper flange of guide No. 3, upper and lower flanges of guide No. 4.
2) Confirm that there is no clearance or curl of 0.3 mm or more at each tape guide when the FF button is pressed from the playback mode to enter the CUE mode, and when the REW button is pressed from the playback mode to enter the REV mode.

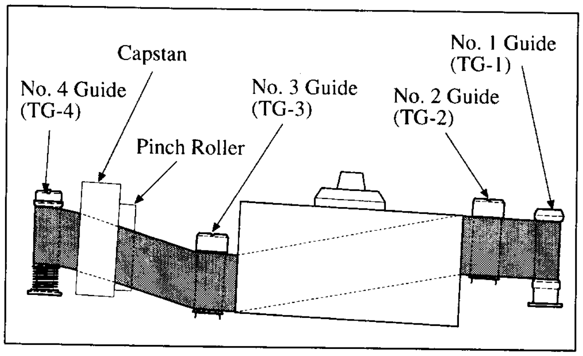
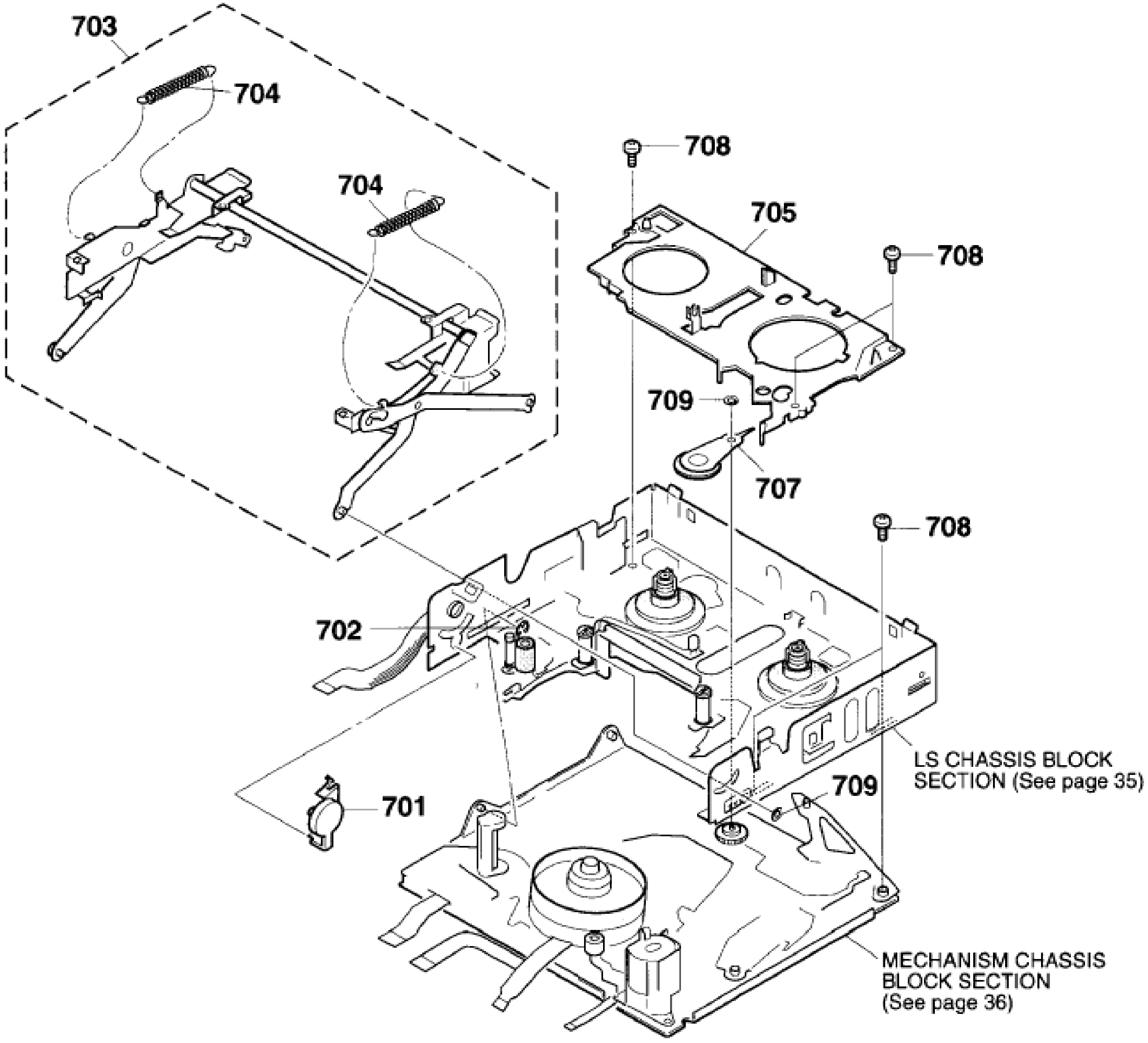


Fig. 35

5-1. Cassette Compartment Block Section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LS CHASSIS BLOCK SECTION (See page 35)
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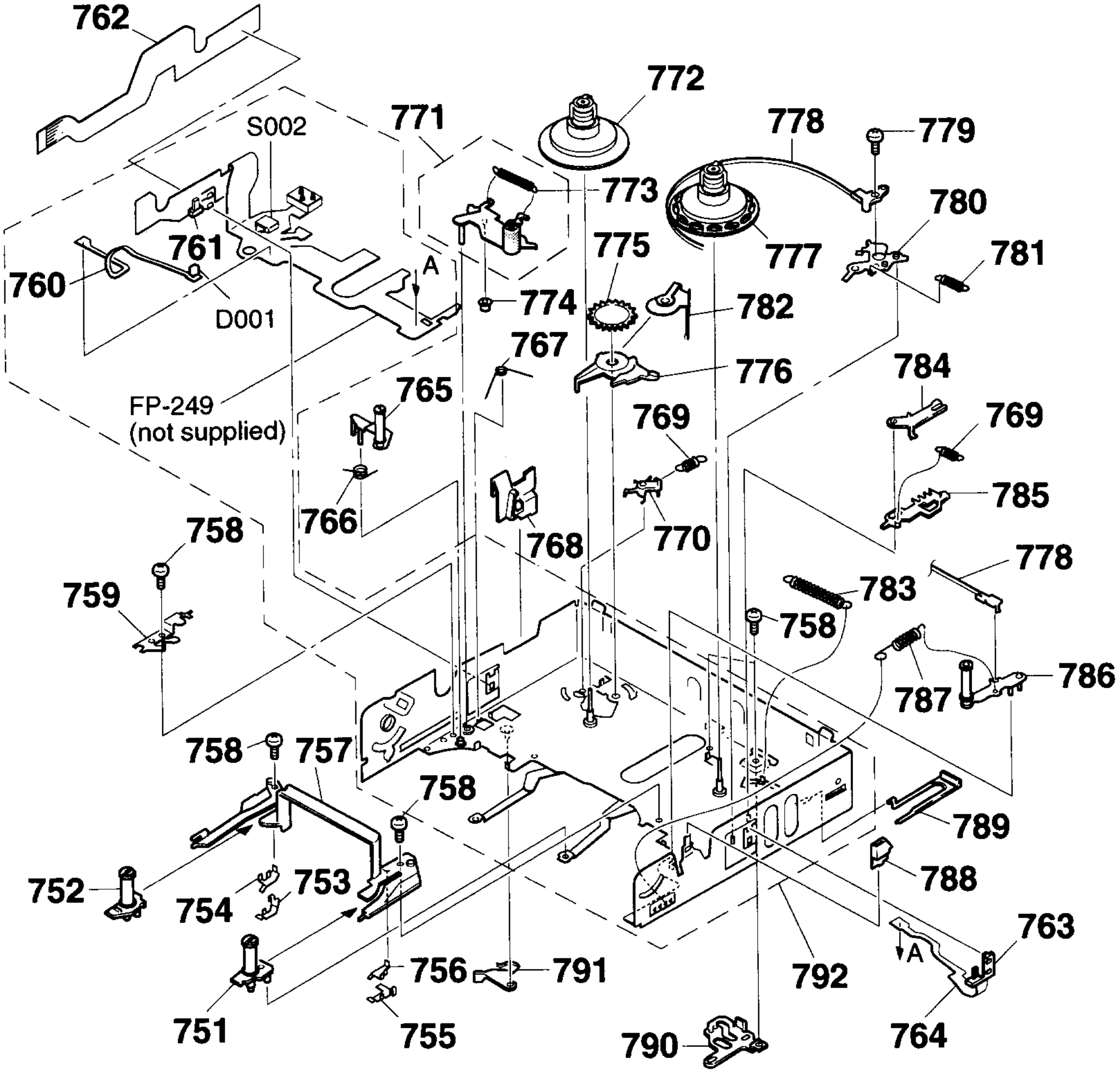
MECHANISM CHASSIS BLOCK SECTION (See page 36)

5-2. LS Chassis Block Section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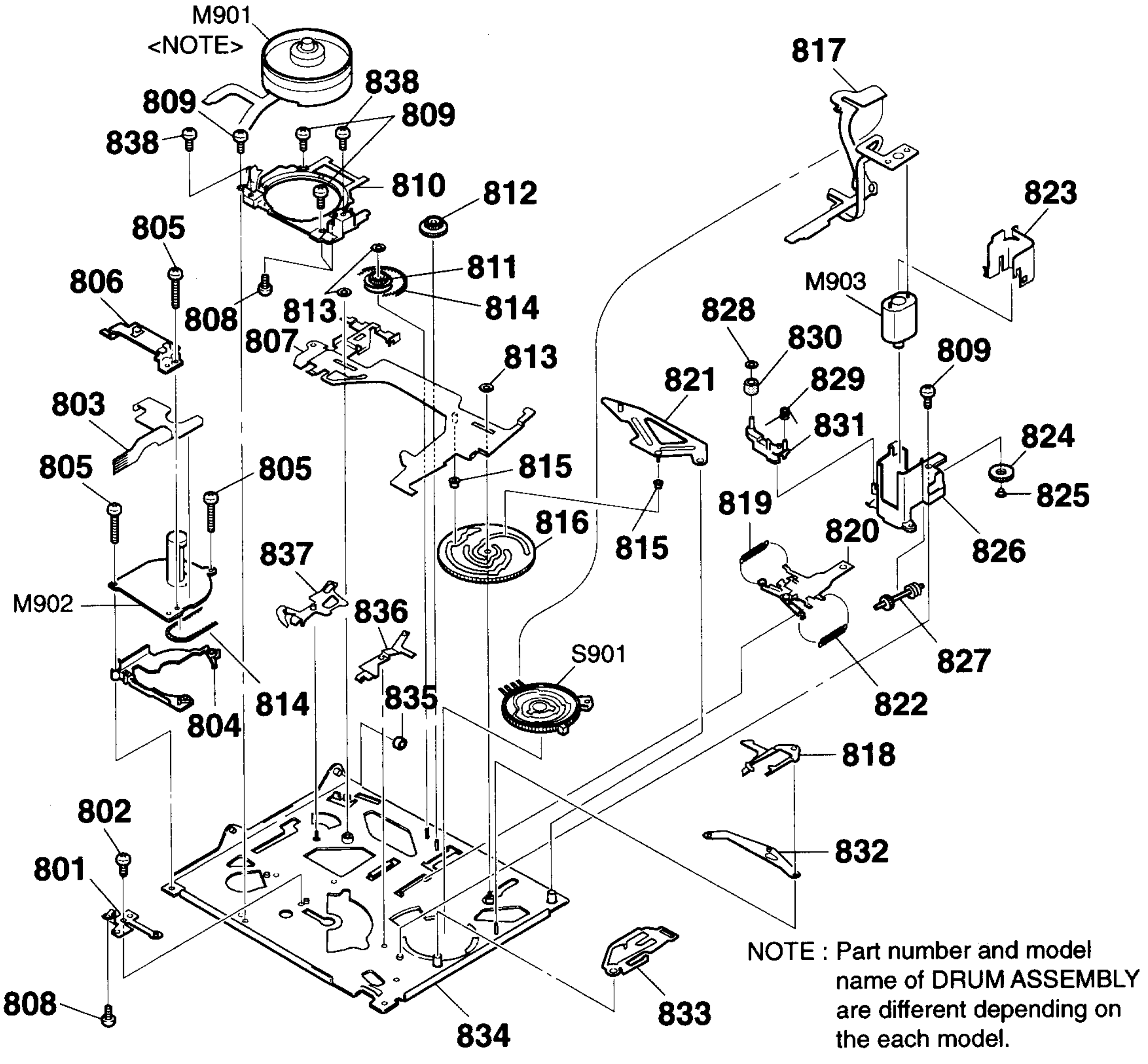
5-3. Mechanism Chassis Block Section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NOTE : Part number and model name of DRUM ASSEMBLY are different depending on the each model.